



## Part 1

(18351 Questions)

**MRCPass**

OnExamination

PassMedicine

PasTest

ReviseMRCP

MRCPstudy

# El-zohry

## MRCP Questions Bank

# 2013

## QUESTIONS & ANSWERS

**1<sup>st</sup> Edition**

# MRCPass

## (2475 Questions)

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# Dedications

To my father,  
my mother,  
my wife,  
my sons:  
Abd El-Rahman,  
Muhammed,  
and Amr

To president Muhammad Mursi



كلما نظرت في وجهه رأيت أبي، غفر الله لنا جميعاً



**Take the first step**, and your mind will mobilize all its forces to your aid.

But

**The first essential is that you begin**

Once the battle is startled, all that is within and without you will come to your assistance

## مقدمة

الحمد لله حمداً كثيراً على أن وفقني لإخراج هذا العمل، وأتمنى أن يستفيد منه كل طالب علم، وأن يجعله خالصاً لوجه تعالى، مع رجائي لكل من يستفيد منه بالدعاء لي ولأسرتي ولسائر المسلمين بظاهر الغيب.

لقد استفدت كثيراً من تجارب الكثير والكثير من الأصدقاء، وبدون عونهم ما خرج هذا العمل بهذه الصورة، لذا لا بد أن أوجه لهم كل الشكر والفضل في هذا العمل.

حاولت في هذا الملف أن أستفيد من خبرات الكثير من الزملاء، وكل مجهودي كان في الجمع والترتيب والتنسيق، أتمنى أن يكون في ميزان حسناتي يوم القيامة.

د/ خالد يوسف الزهري

مستشفى سوهاج التعليمي – سوهاج - مصر

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## زملائي وأساتذتي والذين تعلمت واستفدت منهم كثيراً



د. بشير حلمي

د. رياض السيد  
رياض  
Riyadh  
Shalabi



د. Inas  
Mohamed  
Alassar



د. بلاك هاوس  
Black  
House



د. Ayman  
Shahin

د. مجدي أحمد



د. Ahmed  
Gabr



د. Heba  
Mohammed



د. Âquã  
Marinhê

د. Amira  
Hefney



د. Reem Ali



د. Faisal  
Hemeda



د. Shiny  
Moon

د. Aburas  
Ab



## تجارب وخبرات سابقة

د/ بشير حلمي

الزمالة البريطانية في الباطنة .. من الحلم إلى الحقيقة !

### الزمالة البريطانية في الباطنة .. من الحلم إلى الحقيقة !

بدأت الفكرة عندما أردت أن اطلع على المدرسة الأجنبية في الطب من كثرة ما سمعت عن جودة الطب في الدول الأكثر تقدماً و أردت ان اصقل تجربتي عن طريق الاحتكاك بأحد الشهادات الأجنبية ذات السمعة الطيبة .. وبدأت رحلة البحث عن الطريق المناسب ..

و بعد بحث طويل وجدت ان شهادة عضوية الكلية الملكية الانجليزية هي الانسب نظراً لـ :

- لمرافقة المدرسة الانجليزية في الطب.
- السمعة الجيدة للكلية الملكية على المستوى العالمي.
- لا تحتاج الى السفر فجميع امتحانات زمالة الباطنة في القاهرة.
- تستطيع الحصول عليها بدون ان يحدث اضطراب كامل في حياتك او تغيير مسار لحياتك بالهجرة وخلافه.
- كانت مناسبة لي بشكل شخصي لوجود فاصل زمني بين نهاية الماجستير وبداية الدكتوراه .. وفقني ربي و استطعت انهاء الزمالة دون ان أتأخر عن بقية زملائي.
- تمنح شهادة اخصائي باطنة عند الحصول عليها واستشاري بعد ٥ سنين من النقابة.
- مفيدة في السفر الى الدول العربية .
- بعد الحصول على شهادة الايلتس في اللغة الانجليزية تستطيع تسجيل نفسك في نقابة الاطباء البريطانية والتقديم على وظائف في المملكة المتحدة .

بعد الاستقرار بدأت أصعب مرحلة وهي مرحلة جمع المعلومات .. و أقول كانت هذه المرحلة صعبة و جلست فترات طويلة امام الشبكة العنكبوتية أبحث عن الحاصلين على الزمالة ممن سبقوني في هذا المجال لكي افهم منهم

د / بشير حلمي

الزمالة البريطانية في الباطنة .. من الحلم إلى الحقيقة!

الطريق الصحيح .. فمن الجائز في مثل هذه الطرق أن تسير لمسافة ما ثم تكتشف للأسف أنك في طريق خطأ .. فلذلك المعلومات الصحيحة و الارشاد الصادق هما اهم عوامل النجاح باذن الله .. و ذهبت الى النقابة العامة للطباء في القاهرة (مركز التعليم الطبي المستمر) لجمع مزيد من المعلومات و بدأت الرحلة الطويلة ..

و وفقني الله في هذه الرحلة الى حد لم اكن اتوقعه في ظل انشغال شديد في العمل واستكطعت إنهاء المشوار في زمن قياسي بنسبة اخفاق ٠ ٪ حيث استطعت – و بفضل الله وحده – اجتياز الثلاثة اجزاء من المرة الاولى ..

واستطيع ان اخص اجزاء الزمالة في الاتي :

### الجزء الاول

**المنهج:** فروع الباطنة كاملة (الباطنة عندهم فيها جزء مهم سيكترك وجزء مهم رمد الخاص بالباطنة وجزء مهم جلدية + الفروع التي كلنا عارفيناها عصبية و صدر و كبد و جهاز هضمي و قلب و غدد و كلى و روماتيزم و كلىنيكال فارماكولوجي و انفكشن) و يشتمل الجزء الاول على بعض فروع المواد الاساسية (اناثومي و فسيولوجي و بيوكيمسترك و احصاء و....)

- ❖ يعقد امتحانه ٣ مرات في العام في اشهر **يناير و مايو و سبتمبر** في المركز البريطاني في العجوزة ..
- ❖ تكاليف الامتحان في سنة ٢٠١٢ .. ٥٧٩ **جنيه استرليني** (الافضل دفعها بفيزا كارد على الموقع الرسمي مباشرة )
- ❖ جميع الاسئلة اختيار انسب اجابة من ٥ اجابات
- ❖ الامتحان في ورقتين كل ورقة ٣ ساعات و كل ورقة ١٠٠ سؤال في نفس اليوم من ١١ الى ٢ ومن ٤ الى ٧ (بنام في الورقة الثانية غالباً)

د/ بشير حلمي

الزمالة البريطانية في الباطنة .. من الحلم إلى الحقيقة!

مصادر المذاكرة :

*Essential revision notes for MRCP for Philip karla*  
Or *Oxford handbook of clinical medicine*

+ حل اكبر كمية اسئلة على نظام الامتحان وارشح اسئلة من موقعين على النت

*Onexamination and passmedicine*

(حل الاسئلة عدة مرات وقراءة الاجابة جيدا وشرح الاجابة )

### الفترة المناسبة للتدريب : ٦ شهور

**الجزء الثاني ( وهو في رأي الجزء الاصعب )**

**المنهج:** فروع الباطنة كاملة (الباطنة عندهم فيها جزء مهم سيكاترك وجزء مهم رمد الخاص بالباطنة وجزء مهم جلدية + الفروع التي كلنا عارفينها عصبية و صدر و كبد و جهاز هضمي و قلب و غد و كلي و روماتيزم و كلىنيكال فارماكولوجي و انفكشن) و لكن يختلف عن الجزء الاول في ان الاسئلة اطول و في صور في كثير من الاسئلة اشعات عادية و مقطعية و رنين و صور قاع عين و صور رسم قلب و جلدية.

- ❖ يعقد امتحانه ٣ مرات في العام في اشهر ابريل و يوليو و نوفمبر في المركز البريطاني في العجوزة.
- ❖ تكاليف الامتحان في سنة ٢٠١٢ .. ٥٧٩ جنيه استرليني (الافضل دفعها بفيزا كارد على الموقع الرسمي مباشرة )
- ❖ جميع الاسئلة اختيار انسب اجابة من ٥ اجابات
- ❖ الامتحان ٣ ورقات كل ورقة ٩٠ سؤال ورقتين في يوم و الورقة الثالثة في اليوم التالي.



د / بشير حلمي

الزمالة البريطانية في الباطنة .. من الحلم إلى الحقيقة!

مصادر المذاكرة :*Essential revision notes for MRCP for Sanjay Sharma*

+ كتب الجزء الاول

*Essential revision notes for MRCP for Philip karla*Or *Oxford handbook of clinical medicine*

+ اكبر كمية اسئلة على نظام الامتحان وارشح اسئلة من موقعين على النت

**Onexamination and passmedicine**

(حل الاسئلة عدة مرات وقراءة الاجابة جيدا وشرح الاجابة )

+ التدريب على صور الاشعة و قاع العين و الجلدية و رسم القلب

و أذكر ان الامتحان كان طويلا جدا وكنا نصارع الوقت ..

**الفترة المناسبة للتدريب : ٦ شهور****الجزء الثالث (كان الامتع والاجمل بالنسبة لي)**

الجزء الكلينيكال تعلمت فيه كيف يكون امتحان الكلينيكال وكيف تقيس قدرات الطالب وكيف تقيم الطالب على اساس علمي (لكم اتمنى ان يطبق نموذج امتحان الكلينيكال في الكلية عندنا و اليات التطبيق في منتهى السهولة )

نظام الامتحان عموما ان في كل لجنة ٢ اساتذة ممتحنين واحد مصرى والثانى بريطانى .. يستقبلك الممتحن من على الباب بمجرد ان يرن الجرس معلنا بدء اللجنة ويقدم لك زميله الممتحن الاخر ويقوم احدهما بسؤالك ويضع تقييم في ورقة بها عدة نقاط للتقييم على كل كلمة وحركة بشكل عادل جدا و الاخر يقيم فقط ثم يتبادلا الادوار في الحالة الاخرى الاخر يسأل ويقيم والثانى يقيم فقط ..

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## ٥ محطات

■ الاولى: صدر و بطن

■ الثانية: هيستورك فقط (و لهم فى الهيستورك طريقة رائعة فى الاختبار تختلف جذريا عن الهيستورك عندنا فانت تأخذ ورقة بها سيناريو خارج الغرفة تقرأه ثم تدخل لتناقش شخص طبيعى (ممثّل) فى الاعراض المكتوبة فى الورقة ويستمع الممتحان الى طريقتك فى الاسئلة وتسلسلك فى تناول اعراض المريض وسؤالك عن احتمالات التشخيص ومواساتك للمريض اذا احتاج الامر وهكذا (انه رائع حقا)

■ الثالثة: قلب و عصبية

■ الرابعة: مهارات الاتصال بالمريض واقاربهم فهو يضعك فى موقف صعب نمر به يوميا كموقف ان مريض لا يريد اخذ علاجه او مريض يريد ان يخرج من المستشفى قبل اكتمال علاجه او مريض اخذ علاجاً بالخطأ وابنه فى حالة غضب ثم يرك كيف ستتصرف فى هذا الموقف ومدى مهنتك وقدرتك على علاج الموقف ( ما هذا الجمال )

■ الخامسة: اشبه بالحالة الطويلة عندنا فى الامتحان فانت تأخذ هيستورك ثم تعمل فحص مركز للعيان ثم تناقش الممتحن فى العلامات التى وجدتتها وترد على اسئلته ..

و افضل طريقة للتدريب على امتحان الكلينيكال الممتع جدا بالنسبة لى هو التدريب ليل نهار على الهيستورك والكومينيكيشن (اتذكر لىالى السكاك بى مع صديقى فى السعودية فى التدريب على الهيستورك والكومينيكيشن والحمد لله نجحنا سويا من كتاب شهير اسمه Ryder)

د / بشير حلمي

الزمالة البريطانية في الباطنة .. من الحلم إلى الحقيقة!

و فى بقية المحطات التدريب و رؤية اكبر كم من الحالات والتدريب على  
الفحص الصحيح و التقديم الصحيح للحالة فى الوقت المحدد وغالبا ما يكون ٦  
دقائق وقراءة من كتاب شهير اخر اسمه *Oxford speciality training (OST)*  
ومن الممكن كما فعلت الاستعانة بكورسات فقط فى الجزء الثالث .. الجزئين  
الاول والثاني لا يحتاجان اطلاقا ..

## الفترة المناسبة للتدريب ٩ شهور

### نصيحة للسالكين فى الطريق :

- اعقد العزم و ابدأ الان و خذ الخطوة الاولى و لا تلتفت الى المشتطات و لا  
تستمع الى كلام العاجزين فلقد سمعت عنها الاساطير من استحالة النجاح  
و طول الطريق .. كنت كلما انتهيت من جزء ابدأ فى سماع الاساطير عن  
الجزء الذك يليه و وجدت انه كلام عار من الصحة ... فبالصبر و الكفاح و  
العزم يلين الحديد باذن الله ..
- ان لم تكت متميزا فستختفى وسط الزحام .. احرص على ان تكون متميزا  
وسط اقرانك و احرص على ان تبتكر و لا تكتفى بالوقوف فى طابور  
الانتظار تنتظر دورك دائما .. ابحث عن الجديد المتميز .. و اعمل بكل جهد  
فالنوايا الحسنة وحدها لا تكفى.
- الصبر الصبر و الجهد الجهد .. فترك كثيرا من الزملاء يتحدثون فقط و لا  
يتعدى الحماس مرحلة شراء الكتب و التقليب فى صفحاتها ثم سرعان ما  
تفتر الهمم .. فالصبر يا سادة فكلما كان الهدف كبيرا كان يحتاج الى  
جهد اكبر و صبر اكبر ..
- وفى النهاية استعن بالله ولا تعجز .. ابذل كل الجهد و اترك النتيجة لرب  
حكيم ..

استودعكم الله و اتمنى ان ارك من هم امامى الان يحكون لى و لنا و للاجبال  
عن قصص نجاحهم قريبا باذن الله ..

## تجربة الدكتور أحمد جابر

أنا الحمد لله نجحت في امتحان **MRCP part 1** شهر سبتمبر وحبيت اكتب هنا شوية نصايح عن الامتحان وطرق المذاكرة.

طبعاً وقبل كل شئ لازم الاعتماد على الله سبحانه وتعالى.

### • بداية الامتحان MCQ باطنة و Basic science

ورقتين كل ورقة 3 ساعات فيهم 100 سؤال بينهم ساعتان راحة

الناس بتستغرب اوى وهتستغرب من اللى انا هاقله لان اغلب الناس وانا كنت واحد منهم بتبقى متخيلة ان الامتحان صعب جدا جدا وان كم المذاكرة كبير وان الوقت المطلوب كثير اوى بس الحقيقة ان كمية المذاكرة قليلة لان العبرة في الكيف وليس الكم.

أهم حاجة تكون فاهم وتعرف تطبيق وده بيبجي اكثر من حل الاسئلة يعنى الطبيعى انك هتنبذل مجهود اكبر في حل الاسئلة من المذاكرة نفسها .

فترة المذاكرة للامتحان هتختلف حسب كل واحد وظروفه المتوسط مت اعتقادي 4 شهور كويسين اوى

### • مصادر المذاكرة

1- Karla essential revision notes for MRCP كتاب ممتاز بس مشكلته ان في مواضيع فيها تفاصيل زيادة اوى ومواضيع ناقصة

2- Oxford handbook of clinical medicine

الكتابين دول اعتقد ان الواحد ميستخدمهمش غير في الجزء الثاني أما بالنسبة للجزء الاول انا مذاكرتش غير مذكرة the only mrcp notes u will ever need ومعاهما حل الاسئلة

3- The only MRCP notes u will ever need 4<sup>th</sup> edition كافية جدا لامتحان الجزء الاول وممكن التاني كمان

4- Basic science for mrcp أغلبه الصراحة مش هتحتاجه ما عدا البرانشات المهمة

كتب الاسئلة كثير اوى اشهرهم , Last minute و Get through بس الصراحة لما اكيد احل منهم لقيت اسئلتهم صعبة جدا وبعيدة عن واقع الامتحان على عكس مواقع الاسئلة

• مواقع الاسئلة وحل الاسئلة مهمة جدا جدا هتلاقيهم موجودين كلهم على النت ممكن تنزل الاسئلة، لو حبيت تشترك فواحد بس كفاية

[www.Passmedicine.com](http://www.Passmedicine.com)

[www.Onexamination.com](http://www.Onexamination.com)

[www.Pastest.co.uk](http://www.Pastest.co.uk)

- **Basic science** بتشكّل حوالى ربع الامتحان  
أهم البرانشات pharmacology pharmacology يتبقى حوالى 20 سؤال  
وبعد كده genetics ,immunology ,statistics  
بقية البرانشات زى الاناتومى والفسىولوجى أسئلتهم قليلة وفى الغالب يتبقى عبارة عن اسئلة clinical مش  
basic يعنى تطبيق للمعلومات الاساسية واغلبهم هتتعرفهم من مذاكرة الباطنة نفسها  
هتذاكرهم من كتب Basic science for MRCP او الجزء الخاص بال basic من كتاب karla او  
MRCP notes
- **الباطنة**  
زى ما انا قلت قبل كده مذكرة the only MRCP notes u will ever كافية جدا لامتحان الجزء الاول سواء  
فى الباطنة او فى basic science والكتب الثانية ممكن ترجعلها لو حبيت تفهم موضوع اكثر
- **طريقة المذاكرة**  
كل واحد وله طريقته وفى طرق كثير وكويسة فالموضوع مفهوش وصفة سحرية ولا حاجة واهم حاجة ان  
الجزء اللى تذاكرة تحل علطول وراه اسئلة  
MRCP notes معتمده بشكل كبير على passmedicine عشان كده عشان هتلاقى حل passmedicine  
بعد مذاكرة المذكرة سهل والانتين مع بعض كافيين بشكل كبير لامتحان الجزء الاول  
أول مرة تحل الاسئلة هتلاقى اسئلة كثير صعبة وجديدة وهتلاقى اسئلة مجمعة اكثر من برانش ومش هتتعرف  
تحلها عادى جدا  
أنا رأيى ان الواحد يذاكر برانش من مذكرة MRCP notes مذاكرة على السريع وبعدها تحل الاسئلة من  
passmedicine وتقرأ تعليقات الاسئلة اللى انت شايفها صعبة وممكن تقرأ الاسئلة كمان مرة على السريع قبل  
مراجعة البرانش كمان مرة من المذكرة  
بعد كده ممكن تحل البرانش من pastest او onexamination هتلاقى افكار جديدة وأصعب وعشان كده  
خلى دولة بعد passmedicine  
لو احتجت تفاصيل اكثر فى اى موضوع بص فى karla او oxford  
كل متخلص جزء معين من المنهج ثلاث ولا اربع برانشات امشى على الاسئلة تانى بشكل سريع على الاقل  
اسئلة passmedicine  
حاول تحل الاسئلة اكثر من مرة كل مرة هتلاقى الموضوع اسهل  
ربنا يوفقكم جميعا ان شاء الله

## Experience of Dr. Mohamed Sabagh for MRCP part 1&2

المؤلفان [Heba Mohammed](#) و [Mahmoud Abdel-Raheem Fathy](#) في [MRCP part1, 2 written and PACES الزمالة البريطانية لامراض الباطنة](#)

أهم حاجة في اجتياز الزمالة هو الحلم بتحقيقها لازم الأول تحلم وتطلع لها وإنسى كلام المحبطين من الأصدقاء والعائلة على سبيل المثال لا الحصر ياعم دى محتاجة فلوس جامدة قوى أو يا بنى إحنا تعليمنا متخلف ومتعلمناش حاجة فى الكليه إزاي حنقارن نفسنا بيهم أو يقولك دى مستقبلها بره بس فى مصر لازم تعادلها وإلخ إلخ أولا لاحظ كل اللى يقولك كدة حتلاقيه يالما ميعرفشى عن الزمالة حاجة يا إما حاول وفشل فمتديش وذلك لأى حد وخليك واثق إن ربنا معاك لإنك طالب علم ثانيا لازم تعرف إنت بتدور على إيه علشان تلاقيه يعنى المعلومة مهمة قبل ما تبدأ تذاكر أنا ذاكرت غلط كتير لحد ما لقيت واحد محترم دلنى على طريقة المذاكرة الصح ونفذتها ونجحت الحمد لله بسكور محترم فى الجزئين الأول والثانى نظرى وبحضر للكليكال على فكرة الزمالة طريقة للتفكير بوجهة نظر مختلفة وطريقة مختلفة للتعامل مع الحالة أكثر من كونها شهادة بتحفظها شويه معلومات ودا واضح أكثر فى الجزء الثانى نظرى وعملى إنه بيختبر مهارات كتيرة فيك مش بس كونك عارف المعلومة وخلص لازم كمان تعرف إن الزمالة كصعود درجات السلم يعنى لحظة ما حتتجج فى بارت ون تأكد إنك مؤهل لبارت تو

طريقة المذاكرة كالاتى إبدأ بالسؤال مش بالنظرى لأن الإمتحان بييجى أسئلة مش نظرى ودا مهم إنك تتمرن عليه من اللحظة الأولى حتقولى مهو أنا هجاوب غلط أول مرة حقولك مهو حضرتك لو قرئت برضه ممكن تجاوب غلط ثانيا إنت كسبت وقت إنك فكرت فى السؤال ثانيا لما ترجع تقرأ الموضوع حتعرف تقرأ إيه وتركز فى إيه يعنى مثال لو سؤال بتكلم عن side effects of corticosteroids

فكر الأول فيه بعدين جاوبه وبعدين إقرأ الشرح ولوحسيت إن الشرح كافى خلاص لو حسيت إنك محتاج تزود معلوماتك إفتح ال kumar or karla or handbook of clinical medicine ; oxoford الكتاب اللى ترتاح له وإقرأ منه بييجى بقى على المصادر اللى تذاكر منها بعد ما عرفت طريقة المذاكرة أنا حتكلم عن خبرتى الشخصية

### MRCP part 1

كنت بيدأ أحل ال passmedicine q

لأن الشرح بتاعه وافى وكويس وكمان أفتح لينكات ال guidelines

اللى بيحطها وزى ما قولت لو مش فاهم حاجة يرجع أفتح كومار لأن بصراحة كارلا معجبتيش ككتاب هو ينفع لمراجعة المعلومات قبل الإمتحان وأنا واحد بدأت من تحت الصفر فكنت محتاج أقرأ كتير علشان أفهم تفاصيل أكثر بعد ما بخلص الجزء من باسميديسن

بيبدأ أذاكر onexamination وبحاول أتقنه كويس أنا ذاكرت 5 شهور بتركيز متوسط الساعات فى اليوم من 3 إلى أربع ساعات خلصت باسميديسن وأون إكسمنبشن 3 مرات والحمد لله ربنا أكرمنى بسكور محترم تقريبا 75% الملخص

onexamination mandatory

passmedicine mandatory

kumar or karla or oxford handbook any of them is helpful

4 months enough to pass

## MRCP Part 2

ذاكرت بنفس الطريقة كنت بذاكر pastest الأول وبعدين onexamination

فى الآخر بجل شارما وكنت بشوف الصور بتاعة google

وبرضة شوفت الصور اللي فى atlas clinical medicine

بس كنت حاسس إنى ماشى فى الطريق الصح الأفكار فى الجزء الثانى مش زى اللى بتذاكرها فيه أفكار ياما جديدة ومختلفة وهو بيختبر سرعة بديتهك وفهمك للمعلومة وطريقة تفكيرك فى الحالة يعنى غالبا النجاح فى بارت تو مش بيعتمد على مذاكرة المعلومة بيعتمد أكثر على فهمك ليها وللتفاصيل المتشابهة معاها تقدر تقول كدة بارت تو بيعتمد على فهمك ل differential diagnosis

الأسئلة قريبة من الأولون إكسمنيشين بس أصعب ولازم تكون فاهم كل معلومة بتذاكرها بعنى بإختصار بارت تو هو التجويد والإستعاب لمذاكرة بارت ون خبرتى فى الجزء الثانى مش حابب أقولها علشان الناس متكسلش لإنى ذاكرت مدة صغيرة قوى قبل الإمتحان بس أنا شرحت إنه بيعتمد على مهارات فى الإجابة مش بكثر المذاكرة الحمد لله نجحت من أول مرة بسكور 569 معرفشى دول كام فى الميه بس درجة النجاح 425 القصد إجتهد قدر المستطاع والمكسب مش بس فى الحصول على الشهادة بس مكسبها إنها بتخليك تعرف تنفع مريض محتاجك بعد ما ضاقت بيه السبل مع دكاترة تانيين تفكيرهم كلاسيكى ومتنساش إن ربنا بيرفع الذين آمنوا والذين أوتوا العلم درجات ودايما حط فى بالك إن إنتظار يوم العيد إحسن من يوم العيد نفسه أى أن المتعة الحقيقة فى الرحلة مش فى الوصول للهدف أنا كنت بستمع قوى لما بقرأ كومننت وألقيه بيفسر لى حالة شوقتها وكنت محتار فى تفسيرها وأخيرا أسألكم الدعاء وربنا يوفق الجميع وآسف على الإطالة

## Experience of Dr Salem Omar for part 1

المؤلف [Heba Mohammed](#) في [Egyptians for MRCP part 1](#)

السلام عليكم ورحمة الله وبركاته :

- 1- الجميع يعرف ان الامتحان ورقتين كل ورقة 100 سؤال والمدة 3 ساعات لكل ورقة مع استراحة بين الورقتين
- 2- توزيع الاسئلة نفس التوزيع المذكور على موقع الزمالة البريطانية لذلك يجب اعطاء كل قسم حصة في الدراسة حسب عدد الاسئلة مثلا قلبية 15 سؤال بينما عينية 4 اسئلة لذلك هذه نقطة هامة جدا
- 3- لاتدرس اي شي نادر جدا لان ذلك يضيع وقتك والاسئلة قليلة جدا من هذا النوع
- مثال : امراض خزن الغليكوجين نادرة التواتر في الامتحان ودراستها بالتفصيل يضيع وقت لذلك لاتدرس اكثر من اسم المرض وسببه واهم موجودة مخبرية او شعاعية واهم علاج دون اي تفصيل اخر

4- The only MRCP notes you will ever need

يغطي اكثر من 80 % من الاسئلة بشكل مؤكد لذلك ضعة الخط الاول في دراستك

5- كتاب كالرا يغطي اكثر من 70 % من الاسئلة بشكل مؤكد

6- دراسة الكتابين يغطي 90 % من الاسئلة وذلك حسب الوقت

اذن من خلال تجربتي مع الجزء الاول من الامتحان فان الكتابين السابقين كافيين حوالي بنسبة تسعين بالمائة

وهنا يأتي السؤال في مصادر اخرى واقول طبعاً ومثال ذلك يمكنكم تنزيل اهم guidelines من nice

مثلا ويتضمن المقاربات العلاجية والتشخيصية وافضل دواء او استقصاء

علما ان الكتابين السابقين خاصة كتاب ال The only MRCP notes

حاول تغطية ذلك جيداً

--- بالنسبة للمواقع لحل الاسئلة اهمها :

1- Onexamination

ويجب حل كل الاقسام كاملاً وخاصة الاسئلة المتعلقة



بأهم استقصاء والتشخيص والتشخيص التفريقي والدواء المثالي والية الدواء والتأثير الجانبي مع ملاحظة انه حوالي 10-  
15 سؤال يأتيون بالحرف من الموقع وكرر بالحرف دون تعديل - اضافة الى عدد كبير من الاسئلة بنفس الفكرة ولكن بصياغة اخرى

## -2 Passmedicine

مهمة كذلك جدا ويأتي اسئلة مشابهة بالفكرة تماما والتعليق على الجواب مهم جدا لان من خلاله تجمع كثير من الافكار  
لاسئلة اخرى وتدعم معلوماتكم بافكار لاسئلة اخرى

## -3 Pastest

مهم بالدرجة الثالثة لانه تركيز لمعلومات كتاب كالرا اولا وعدد كبير من الاسئلة بنفس الافكار واسئلة قريبة جدا جدا

## -4 Revisemrcp

مهم بالدرجة الرابعة وقد يذكر في الامتحان سؤاين منه جاؤوا حرفيا اضافة لاسئلة تحمل نفس الافكار

المدة الزمنية للدراسة 4 ساعات يوميا كافية للراغب بالتقدم خلال 3 اشهر - شهرين دراسة مع مراجعة حل بعض الاسئلة  
لتكون بوصلة للدراسة و 1 شهر حل الاسئلة بشكل مكثف

هل علينا التركيز على حل كل الاسئلة بنفس السوية والجواب مؤكد لا واليك الأمثلة التالية :

A 30-year-old female presents with a one year history of galactorrhoea. She has been receiving treatment for hay fever, depression, obesity and dyspepsia.

Her investigations reveal:

Full blood count Normal

Urea and electrolytes Normal

Prolactin 820 mU/l (<360)

Free thyroxine (T4) 18.3 pmol/l (10-22)

TSH concentration 2.1 mU/l (0.4-5)

Which one of the following drugs is most likely to explain these findings?

(Please select 1 option)

- 1- Astemizole
- 2- Metoclopramide
- 3- Orlistat
- 4- Paroxetine
- 5- Ranitidine

مثل هذا النمط ممكن وروده في الفحص لأنتيركز على تأثير جانبي للدواء لان اسئلة الادوية تركز على احد الامور التالية حصرا :

1- اهم تأثير جانبي

2- الالية الاساسية للدواء

3- التداخل الدوائي الاهم بين دوائين

4- الدواء النوعي

مثال اخر : هذا السؤال جاء في الفحص الماضي

MRCP PART 1 15-1-2012

ومعظم الشباب حل السؤال خطأ لان الجواب ليس Subacute combined degeneration of the cord

An 80-year-old woman has a three month history of progressive numbness and unsteadiness of her gait.

On examination, there is a mild spastic paraparesis, with brisk knee reflexes, ankle reflexes are present with reinforcement, extensor plantars, sensory loss in the legs with sensory level at T10, impaired joint position sense in the toes, and loss of vibration sense below the iliac crests.

Investigations were as follows:

Haemoglobin 12.2 g/dL (12-16)

MCV 95 fL (80-96)

What is the most likely diagnosis?

(Please select 1 option)

- 1- Anterior spinal artery occlusion
- 2- Dorsal meningioma
- 3- Multiple sclerosis
- 4- Subacute combined degeneration of the cord
- 5- Tabes dorsalis

الاسئلة من هذا النمط كثيرة جدا وتتضمن قصة سريرية مع فحص سريري وموجودات مخبرية ثم السؤال وهو احد الاحتمالات التالية :

1- ماهو التشخيص الاكثر احتمالا

2- ماهو الاستقصاء التالي شعاعيا او مخبريا او سريريا

3- ماهو العلاج الامثل

النوع الثالث من الاسئلة يركز على معلومة محددة عن مرض ما مثال على ذلك هذا السؤال

*Which clinical feature is consistent with a diagnosis of VIPoma?*

(Please select 1 option)

- 1- Alkalosis
- 2- Hypoglycaemia
- 3- Hypokalaemia
- 4- Increased gastric acid secretion
- 5- Provocation of VIP release by somatostatin

مثل هذا النمط ممكن وروده ولو تأملت السؤال للوجدت ان نقص البوتاسيوم علامة فارقة عندما تدرس الفيوما وهكذا ركز على النقطة الفارقة في كل مرض

لذا عن الدراسة نركز اهم علامه سريرية او علامة فارقة مشخصة للمرض واهم استقصاء واهم علاج وبذلك تكون اختصرت كثيرا عند الدراسة مثال :

داء هودجكن

ما عليك معرفته:

1- اهم العوامل المؤهبة

2- اعراض B

3- الفحص الحاسم للتشخيص

4- مشعرات الانذار جيد او سيء

5- التصنيف النسيجي لان له علاقة بالانذار – ماهو الافضل وما هو الاسوء

6- العلاج النوعي فقط

7- لاحظ لو قمت بكتابة ماسبق ستجد نفسك امام 10 اسطر على الاكثر للمرض وليس عدة صفحات

هناك اسئلة من غير المحتمل ورودها وهي من احد الاصناف التالية

1- تركيز على مرض نادر

2- الاسئلة ذات الاحتمالات غير المترابطة سوف نورد مثال عليها

3- الاسئلة التي تركز على نسب مئوية غير متفعلها كل بلد يختلف عن الاخر في شيوع مرض ما

4- الاسئلة التي تركز على امور اختصاصية جدا خاصة في بعض اسئلة المناعة والوراثة والبيولوجيا الجزيئية --- انظر لاحقا دراسة ال basic

امثلة :

مثال 1 مثل هذا السؤال لا اتوقع وروده في الامتحان كونه يركز على معلومة اختصاصية جدا

A 55-year-old man with Type 2 Diabetes Mellitus and Ischaemic Heart Disease has been researching the Internet! He asks your opinion on Laser Transmyocardial Revascularisation.

*Which of the following statements about this technique is true?*

- A) avoids the need for major surgery
- B) damages the endocardium
- C) involves destruction of coronary stenoses
- D) is of particular use in severe proximal coronary artery disease
- E) stimulates collateral vessel formation

مثال 2 كلنا يعلم ان فهم تقنية PCR

هامية وكذلك دور الخلايا التائية لكن اعتقد ان المعلومات التي لا تمس الروح السريرية للامتحان لا تأتي غالبا

The polymerase chain reaction (PCR) is used to amplify small amounts of deoxyribonucleic acid (DNA) for further analysis. First the DNA double helix must be split into two strands.

*By which of the following is this achieved?*

(Please select 1 option)

- 6- Alkali solution
- 7- Centrifugation
- 8- DNA polymerase
- 9- Heating to nearly 100°C
- 10- Viral reverse transcriptase

*Which one of the following statements concerning T lymphocytes is correct?*

(Please select 1 option)

- 1- Are infected by Epstein-Barr virus in infectious mononucleosis
- 2- Are the primary host response in bacterial infection
- 3- Compose the majority of lymphocytes in plasma
- 4- Produce IgG
- 5- T cell lymphoma has a better prognosis than B cell lymphoma

بينما مثل هذا السؤال التاليين وردين الحدوث ولكم المقارنة والاول وردت فكرة تماما في فحص الماضي ولكن ليس حرفيا

A 75-year-old man has a history of chronic lymphocytic leukaemia. He has had treatment with several courses of chemotherapy and has now been admitted to hospital with pneumonia.

His medical history revealed that he had suffered several previous upper respiratory tract infections over the previous six months.

*Which of the following components of his immune system is likely to be deficient?*

(Please select 1 option)

- 1- Complement
- 2- Immunoglobulin G
- 3- Macrophages
- 4- Mast cells
- 5- T lymphocytes

*In which one of the following conditions is deoxyribonucleic acid (DNA) analysis the most useful diagnostic test?*

(Please select 1 option)

- 1- Adult polycystic kidney disease
- 2- Down's syndrome
- 3- Huntington's chorea
- 4- Hypertrophic obstructive cardiomyopathy
- 5- Klinefelter's syndrome

مثال 3

لاحظ عند حل هذا السؤال ستجد نفسك امام احتمالات غير مترابطة أي كل احتمال يناقش فكرة مستقلة وهذا لا يأتي في الامتحان

*Concerning immune cell antigen receptors, which of the following statements is false?*

(Please select 1 option)

- 1- Affinity maturation of the B cell receptor is an important process initiated during the primary immune response
- 2- IgD are surface receptors of B lymphocytes
- 3- In normal individuals T lymphocytes with T cell receptors (TCR) that recognise autoantigens are all deleted to prevent autoimmunity
- 4- TCRs with different antigen specificities can be co-expressed on a single T lymphocyte
- 5- The antigen specificity of the T cell receptor is generated during development

بالنسبة لدراسة الـ بيـزك

1- لا تدرس أكثر من المعلومات من الكتابين الذين نصحنا بهما

2- قد لا تغطي كل الأسئلة تماماً لأن دراسة كتاب آخر يعني مزيد من الوقت وتشتت الأفكار

3- بالنسبة للوراثة : الكتابين كافيين تماماً

4- الإحصاء كتاب النوتس كافي تقريباً

- 5- التشريح والفيزيولوجيا لا تدرسه بشكل منفصل لانه يأتي بمقدمة كل بحث خاصة كتاب كالرا
- 6- المناعة مفصل جدا في كالرا لذا لاتضيع وقتك فيه وادرسه من كتاب النوتس فقط
- 7- اسئلة الفحص تركز على الامور العامه وخسارة بعض الاسئلة ليس مشكلة كبيرة خاصة اذا منحت الوقت لاجاث اكثر اهمية
- 8- حل الاسئلة يغطي لديك الكثير من الثغرات
- 9- اسئلة ال ReviseMRCP
- للبيزك حلوة وتوفر معلومات جيدة لذا ادرس هذه الاسئلة – طبعا اضافة ل ONEX . PASSMED .. etc
- 10- اخيرا اتمنى لكم التوفيق جميعا وان يجعلما نفعله خالصا لوجهه الكريم

## شوية تفاصيل كدة عن امتحان بارت وان

المؤلف [Heba Mohammed](#) في [Egyptians for MRCP part 1](#)

السلام عليكم هحكيلكم كدة عن شوية حاجات بخصوص الامتحان يمكن يكون عندكم بعض التساؤلات بخصوصها اخر مرة اتكلما عن انك ازاى تحجز امتحان الجزء الأول بعد ما بتحجز ببيعتولك شهادتك اللي انت بعتها لهم تاني \_ يمكن الموضوع ده بياخد حوالي اسبوعين وببيعتولك ايميل فيه كل التنبيهات اللي عايزينك تعرفها والاوراق اللي عايزينك تجيبها معاك يوم الامتحان عشان تثبت بيها شخصيتك ....هم بيعترفوا باي مستند اثبات شخصية اسمك يكون مكتوب فيه باللغة الانجليزية زي ما بعتهم لهم ...وغالبا هو الباسپورت في نفس الايميل بيكون باعتك صفحة اسمها Admission Document دي بتطبعها وفيها مكان بتوقع عليه وتكتب فيه التاريخ ودي برضه بتاخذها معاك وبياخذوها منك يوم الامتحان.

يوم الامتحان بقى في نفس الايميل بيكونوا باعتينك مواعيد الامتحان بالتفصيل

بتروح قبل ميعاد الامتحان بساعة

الورقة الأولى 3 ساعات

بريك للغدا ساعة ونص وهم مش بيوفرولك غدا انت يا اما بتجيب اكل مع نفسك او تاكل في اي حنة قريبة وترجعهم

الورقة الثانية 3 ساعات برضه

كدة تقريبا انت بتاخذ اليوم كله فلازم تكون نايم اليوم اللي قبله كويس جدا عشان تقدر تركز لحد اخر اليوم ايه هي الحاجات اللي اخدها معايا الامتحان؟؟؟ ولا حاجة ....اهم حاجة تاخذ معاك اثبات الشخصية زي ما قلنا \_الباسپورت زائد

Admission Document ال

مش هحتاج حاجة تاني ومش هيسمحولك تدخل قاعة الامتحان بحاجة تاني حتى القلم الرصاص والاستيكة والبراية بيكونوا حاطينهملك ع الديسك اللي بتمتحن عليه واسمك ورقمك ورقم امتحانك وكل حاجة برضه محطوط ع تيكث ع الديسكو متخضوش لما تلاقوا الورقة الأولى او الثانية عبارة عن حاجة واربعين صفحة!!!!هي المفروض يسموها الكتيب الأول او الثاني مش الورقة (: )

بس انتم عارفين ان الامتحان عبارة عن اختياري ....هي الحالات طويلة بس انت برضه مش هتكتب كثير ....يا دوب بتظلل مكان الاجابة اللي انت اخترتها في ورقة ثانية

وفي الاخر بياخذوا منك الاتنين الورقة اللي فيها الاسئلة والورقة اللي فيها الاجابات Answer Sheet وطبعا بتكون كاتب بيانك ع الاتنين وهم بيراجعوا دهام حاجة المذاكرة كويس والتوكل ع الله وحسن الظن بالله انت ماشي في طريق علم وخير واكيد ربنا هيكرمك فيه ان شاء الله وبالتوفيق

# How to register for MRCP part 1

المؤلفان [Heba Mohammed](#) و [Tarek Altohamy](#) في [Egyptians for MRCP part 1](#)

السلام عليكم

بإذن الله هشرحلكم ازاى تقدموا للجزء الأول من الزمالة عن طريق موقع الكلية الملكية

بس انا عندي ملحوظة في الأول : ان كل صفحة تفتحها ع الموقع لازم تقرا الكلام اللي فيها بالتفصيل ..... هيفيدك جدا وهيفهمك الدنيا..... لو فيه كلمات انجليزية مفهمتهاش ترجمها هستفيد كثير ..... متعتمدش ع البوست ده وبس لأنه فقط عبارة عن اختصار منظم الى حد ما وكمان الخطوات دي ممكن تتغير من فترة للثانية

اول حاجة بتدخل ع موقع الزمالة وخاصة الجزء الخاص بالجزء الأول وده اللينك بتاعه

[http://www.mrcpuk.org/part1/Pages/\\_Home.aspx](http://www.mrcpuk.org/part1/Pages/_Home.aspx)

طبعا هو عليه كل المعلومات اللي تخص الجزء الأول بالتفصيل واي حد هيقراها هستفيد كثير ان شاء الله

بس انا هنا هتكلم بس على حجز الامتحان

فيه قائمة ع الجنب هتلاقى فيها حاجات كثير من ضمنها Application

هتختارها وهتدخلك ع صفحة ثانية اللي هي بتاعة Applying for MRCP part 1 examination

فيها معلومات ظريفة يا ريت تقراها

ع الجنب في الصفحة دي برضه فيه اختيار Apply online

ده هيفتحلنا صفحة فيها كل الخطوات بالظبط واللي اول حاجة فيها انك تفتح حساب على موقع الزمالة Create an online account يبقى كدة وصلنا للمرحلة الأولى: مرحلة سهلة جدا انك تفتح حساب عندهم لازم تكمل 6 خطوات بسيطة جدا بتدخل فيهم البيانات بتاعتك هل سجلت او امتحنت قبل كدة

الاسم الأول والاسم الأخير ولازم تتأكد من ان الاسم اللي هتسجل بيه بالظبط زي ما هو مكتوب بالظبط في النسخة الانجليزي لشهادتك اللي هتطلعها من الكلية وكمان زي ما هو مكتوب في الباسپورت بتاعك

تاريخ الميلاد

الايمل

البلد\_ المدينة\_ الكلية



Date of issue اللي هو تاريخ التخرج

نرجع ثاني لموضوع التسجيل خلصت كتابة بياناتك .... كدة بتكون عملت حساب لنفسك ع الموقع

وهيبعتولك رسالة ع الايميل بتاعك اللي انت كتبتة جواها لينك بتضغط عليه

وبيطلبوا منك باسورد عشان تستخدمه في الدخول لحسابك

### ندخل على المرحلة الثانية

كدة انت عملت حساب على الموقع وفي اي وقت تقدر تدخل تحجز الامتحان

تدخل ع نفس اللينك بتاع الجزء الأول اللي كتبناه فوق

وتعمل Sign in

وينكرر برضه اول خطوات عملناها Application----Apply online--Upcoming exams

وزي ما قلت يا ريت كل صفحة بتدخل عليها بتقراها كويس لأن كلها معلومات مهمة

بعد كدة بيدخلك ع الامتحان اللي الحجز بتاعه شغال دلوقتي

وبتختار Apply

التسجيل للامتحان بيتكون من 7 خطوات

Confirm personal details ودي بتضيف فيها البيانات اللي انت عايز تضيفها ومش لازم تملأها كلها

وبعد كدة بتحفظ البيانات بتاعتك

بعد كدة ببسالك ان كنت سجلت قبل كدة في GMC ولا لأ واذا كنت اشتغلت عندهم هل اخدت ايجازات او عقوبات ولا لأ

هل انت حاليا مقيد ضمن برنامج تدريبي في بريطانيا

وهتختار حضرتك بعد كدة السنتر اللي انت عايز تمتحن فيه

بعد كدة بتختار طريقة الدفع هل كاش ولا بشيك ولا عن طريق الننت

وطبعا اسهلهم هي الطريقة الاخيرة



# Reference ranges

Reference ranges vary according to individual labs.

All values are for adults unless otherwise stated

## Full blood count

Haemoglobin Men: 13.5-18 g/dl

Women: 11.5-16 g/dl

Mean cell volume 82-100 fl

Platelets 150-400 x 10<sup>9</sup>/l

White blood cells 4-11 x 10<sup>9</sup>/l

## Urea and electrolytes

Sodium 135-145 mmol/l

Potassium 3.5 - 5.0 mmol/l

Urea 2.0-7 mmol/l

Creatinine 55-120 umol/l

Bicarbonate 22-28 mmol/l

## Liver function tests

Bilirubin 3-17 umol/l

Alanine transferase (ALT) 3-40 iu/l

Aspartate transaminase (AST) 3-30 iu/l

Alkaline phosphatase (ALP) 30-100 umol/l

Gamma glutamyl transferase (γGT) 8-60 u/l

Albumin 35-50 g/l

Total protein 60-80 g/l

## Other haematology

Erythrocyte sedimentation rate (ESR)

Men: < (age / 2) mm/hr

Women: < ((age + 10) / 2) mm/hr

Prothrombin time (PT) 10-14 secs

Activated partial thromboplastin time (APTT)  
25-35 secs

Ferritin 20-230 ng/ml

Vitamin B<sub>12</sub> 200-900 ng/l

Folate 3.0 nmol/l

Reticulocytes 0.5-1.5%

## Other biochemistry

Calcium 2.1-2.6 mmol/l

Phosphate 0.8-1.4 mmol/l

CRP < 10 mg/l

Thyroid stimulating hormone (TSH) 0.5-5.5  
mu/l

Free thyroxine (T4) 9-18 pmol/l

Total thyroxine (T4) 70-140 nmol/l

Amylase 70-300 u/l

Uric acid 0.18-0.48 mmol/l

## Arterial blood gases

pH 7.35 - 7.45

pCO<sub>2</sub> 4.5 - 6.0 kPa

pO<sub>2</sub> 10 - 14 kPa

## Lipids

*Desirable lipid values depend on other risk factors for cardiovascular disease, below is just a guide:*

Total cholesterol < 5 mmol/l

Triglycerides < 2 mmol/l

HDL cholesterol > 1 mmol/l

LDL cholesterol < 3 mmol/l



# MRCPass

WebSite: [www.MRCPass.com](http://www.MRCPass.com)

Total number of Questions: 2475

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## [ Q: 1 ] MRCPass - Gastroenterology

A 45 year old man presents with acute, profuse, watery diarrhoea some after returning from a holiday in Namibia.

*Which one of the following is the most appropriate treatment?*

- 1- Metronidazole
- 2- Ciprofloxacin
- 3- Vancomycin
- 4- Prednisolone
- 5- Cefuroxime

## Answer &amp; Comments

Answer: 2- Ciprofloxacin

The most likely cause of travellers diarrhoea is *E. coli*. Ciprofloxacin would cover for this as well as shigella, salmonella and campylobacter. However, if giardiasis was cultured in the stool then metronidazole is recommended.



## [ Q: 2 ] MRCPass - Gastroenterology

A 45 year old man has had long standing jaundice, malaise and poor appetite. Over the past 6 months he has lost 2 stones in weight.

On examination he has palmar erythema, jaundiced sclerae, spider naevi, hepatomegaly and ascites.

His bloods reveal:

Bilirubin 50 mmol/l

ALT 150 U/l

ALP 240 U/l

Hep C core antibody Positive

Hep BsAg Negative

Hep A antibody Negative

*What is the likely diagnosis?*

- 1- Abnormal variant hepatitis C
- 2- Superimposed hepatitis E infection

3- Hepatocellular carcinoma

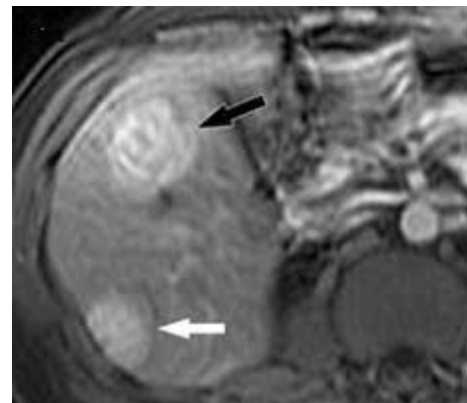
4- Hepatitis A infection

5- Infectious mononucleosis

## Answer &amp; Comments

Answer: 3- Hepatocellular carcinoma

30% of patients with hepatitis C develop hepatocellular carcinoma over 30 years. 20% develop cirrhosis over 20 years.



Hepatocellular carcinoma



## [ Q: 3 ] MRCPass - Gastroenterology

A 72 year old woman with longstanding hip osteoarthritis presents complains of constipation and loose stool. She undergoes a sigmoidoscopy. A rectal biopsy shows pigment-laden macrophages in the lamina propria.

*What is the most likely cause?*

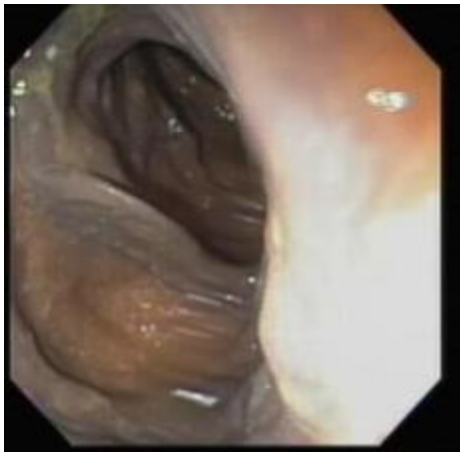
- 1- Non-steroidal anti-inflammatory drugs
- 2- Crohn's disease
- 3- Diverticular disease
- 4- Whipple's disease
- 5- Laxative abuse

## Answer &amp; Comments

Answer: 5- Laxative abuse

The pigment laden macrophages suggest that there is melanosis coli. The most common association is with laxatives. To a lesser

extent, melanosis coli is also associated with ulcerative colitis.



Melanosis coli



[ Q: 4 ] MRCPass - Gastroenterology

A 40 year old man has symptoms of lethargy, joint pains and jaundice which have occurred over the past 8 months. Four years later he became diabetic and was referred to our hospital clinic. He was noted to be pigmented.

Haemochromatosis was confirmed by an iron saturation of 93.4%, a ferritin concentration of 1050 µg/l, and typical pre-cirrhotic changes in a liver biopsy specimen.

*What is the recommended management?*

- 1- Venesection
- 2- Haemodialysis
- 3- Liver transplant
- 4- Phenoxybenzamine
- 5- Glucagon

Answer & Comments

Answer: 1- Venesection

In haemochromatosis, the defect is due to increased iron absorption, hence hydroxypyridone orally helps chelate iron in the gut. However, venesection is preferred therapy and desferrioxamine infusion (another iron chelator) can also be used.

Venesection is recommended when the serum ferritin reading is over 1000 µg/l. Venesection can restore hypothalamic-pituitary-gonadal and can reduce liver fibrosis.



[ Q: 5 ] MRCPass - Gastroenterology

A 50 year old patient has a 2 year history of weight loss and diarrhoea. He also gives a history of episodes of flushing. VIP syndrome is considered by the admitting physician.

*Which one of the following is a feature of VIPoma syndrome?*

- 1- Hypoglycaemia
- 2- Hypokalaemia
- 3- Induction of VIP release by somatostatin
- 4- Anaemia
- 5- Increased gastric acid secretion

Answer & Comments

Answer: 2- Hypokalaemia

VIPomas [vasoactive intestinal peptide (VIP)] originate in amine precursor uptake and decarboxylation (APUD) cells of the gastroenteropancreatic endocrine system and in adrenal or extra-adrenal neurogenic sites.

Features of VIP syndrome include watery diarrhea (100%), hypochlorhydria (70% in adults), hyperglycemia (20-50% in adults), hypercalcemia (20-50% in adults), flushing (20% in adults) and hypokalaemia due to diarrhoea.

Initial treatment is directed toward correcting volume and electrolyte abnormalities by using potassium chloride and sodium bicarbonate. Octreotide controls diarrhea in 80% of cases. Glucocorticoids reduce symptoms in 50% of patients with VIPoma.





Vipoma



## [ Q: 6 ] MRCPass - Gastroenterology

A 45 year old man has returned from holiday in Italy following several episodes of bloody diarrhoea which had lasted over two weeks. He has lost 2.5 kg in weight and has occasional lower abdominal cramping discomfort.

He also a painful swelling of his left elbow and right knee.

*What is the likely diagnosis?*

- 1- Campylobacter infection
- 2- Coeliac disease
- 3- Tuberculosis
- 4- Ulcerative colitis
- 5- Gonococcal sepsis

## Answer &amp; Comments

Answer: 1- Campylobacter infection

Campylobacter infection is one of the commonest causes of infective diarrhoea.

Abdominal pain is often a feature of the illness. Diarrhoea is often associated with blood. Other causes of bloody diarrhoea are salmonella & shigella.



## [ Q: 7 ] MRCPass - Gastroenterology

A 22 year old man has recently

returned from India. He complains of fever, rigors and headache.

On examination he had a temperature of 38°C, a blood pressure of 120/70 mmHg, a pulse of 110 bpm. His abdomen was tender in right upper quadrant.

Investigations showed:

Hb 10.5 g/dL

WBC  $13.5 \times 10^9/L$

Neutrophils  $11.2 \times 109/l$

Platelets  $360 \times 10^9/L$

Blood film No malaria parasites seen

Alk Phos 420 U/L

AST 60 U/L

CRP 110 mg/L

Stool culture Negative

Chest x-ray: Small right pleural effusion

*Which of the following investigations would be of diagnostic value?*

- 1- Ultrasound scan of abdomen
- 2- Anti endomysial antibody
- 3- Typhoid serology
- 4- Stool for ova, cysts parasites
- 5- Colonoscopy

## Answer &amp; Comments

Answer: 1- Ultrasound scan of abdomen

The ultrasound would determine if there is a pyogenic liver abscess or amoebic liver abscess. The clinical history with associated pleural effusion suggests that an abscess needs to be excluded (and drained if necessary).



## [ Q: 8 ] MRCPass - Gastroenterology

A 60 year old woman presents with diarrhoea. She had a past history of radiotherapy for ovarian cancer. Small intestine biopsy reveals villous atrophy, crypt

hypertrophy, chronic inflammatory cell infiltrate of lamina propria and increase in intraepithelial lymphocytes.

*What is the likely diagnosis?*

- 1- Radiation enteropathy
- 2- Coeliac disease
- 3- Ischaemic colitis
- 4- Crohn's disease
- 5- Tropical Sprue

#### Answer & Comments

Answer: 2- Coeliac disease

Histology of small bowel biopsy specimens remains the "gold standard" for diagnosis.

Features recognised include villus atrophy, crypt hyperplasia, degenerate surface epithelial cells, and an increase in intraepithelial lymphocytes.



#### [ Q: 9 ] MRCPass - Gastroenterology

A 60 year old man has a 5 day history of abdominal pains and bloody diarrhoea. He is unwell on admission. Blood pressure is 90/50 mmHg and he has a tender abdomen on palpation.

His Hb is 9.0 g/dl, white cell count  $11.0 \times 10^9/L$  and platelet count is  $80 \times 10^9/L$ . Urea is 18 mmol/l and creatinine 250  $\mu\text{mol/l}$ , sodium 137 mmol/l and potassium 5.5 mmol/l. Blood film shows red cell fragmentation and thrombocytopenia.

*Which of the following is most likely to confirm the unifying diagnosis?*

- 1- CT scan of the abdomen
- 2- Amoxycillin and metronidazole
- 3- Stool sample for E coli 0157
- 4- Mesenteric angiography to exclude ischaemic colitis
- 5- Surgical laparotomy

#### Answer & Comments

Answer: 3- Stool sample for E coli 0157

The diagnosis is HUS (haemolytic uraemic syndrome). The commonest causes are E coli 0157, but other precipitants are campylobacter, shigella and clostridium. There is classical renal failure, thrombocytopenia (HUS-TTP) and evidence of microangiopathic haemolysis on the blood film.



#### [ Q: 10 ] MRCPass - Gastroenterology

A 50 year old man has diabetes. He has the following results:

Alanine aminotransferase 35 U/L

Aspartate aminotransferase 40 U/L

Fasting plasma glucose 7.4

Ferritin 500  $\mu\text{g/L}$ , (15-300)

*Which one of the following is an appropriate investigation?*

- 1- Transferrin saturation
- 2- Serum electrophoresis
- 3- Serum transferrin receptors
- 4- Liver biopsy
- 5- Urinary PBG

#### Answer & Comments

Answer: 1- Transferrin saturation

In hemochromatosis, the serum Fe is elevated ( $> 300 \text{ mg/dL}$ ). The serum transferrin saturation is a sensitive parameter of increased Fe and merits evaluation when  $> 50\%$ . The serum ferritin is increased. Urinary Fe excretion is markedly increased ( $> 2 \text{ mg/24 h}$ ) by the chelating drug deferoxamine (500 to 1000 mg IM based on the size of the patient), and this has been used as a diagnostic test.

In addition, when the Fe content in the liver is significantly increased, an MRI may reflect this change. Liver biopsy had been the gold standard in diagnosis; it now serves only to

provide evidence of fibrosis (cirrhosis). Gene assay (Homozygosity C282y mutations) is also an excellent diagnostic test.



[ Q: 11 ] MRCPass - Gastroenterology

A 65 year old woman presents with dysphagia and intermittent vomiting. Endoscopy shows a tight lower oesophageal sphincter suggestive of achalasia.

*Which of the following medical therapies is most effective?*

- 1- Diltiazem
- 2- Bismuth
- 3- Glyceryl trinitrate
- 4- Botulinum toxin
- 5- Glypressin

Answer & Comments

Answer: 4- Botulinum toxin

Botulinum injections are most effective of all the options for relieving a lower oesophageal sphincter restriction which leads to achalasia. Nifedipine, nitrates or sildenafil can also be used, but are less effective.



[ Q: 12 ] MRCPass - Gastroenterology

*Which of the following factors decreases large intestinal motility?*

- 1- Lactulose
- 2- Parasympathetic activity
- 3- CCKPZ
- 4- Gastric Distension
- 5- Anticholinergic agents

Answer & Comments

Answer: 5- Anticholinergic agents

Anticholinergic agents, e.g. atropine, reduce intestinal motility. All the other agents increase intestinal motility.



[ Q: 13 ] MRCPass - Gastroenterology

A 50 year old presents with tiredness and heavy periods. She is known to drink large amounts of alcohol.

Her investigations reveal:

Haemoglobin 7.3 g/dl

MCV 72 fL

white cell count  $7.5 \times 10^9/L$

platelet count  $250 \times 10^9/L$

serum ferritin 7  $\mu g/L$ , (15-300)

She was commenced on oral iron therapy one month later but her haemoglobin concentration was 7.8 g/dl.

*What is the likely cause of the failure of her haemoglobin to respond?*

- 1- Folate deficiency
- 2- Poor compliance therapy
- 3- Sideroblastic anaemia
- 4- Alcoholism
- 5- Irreversible cause of iron deficiency

Answer & Comments

Answer: 2- Poor compliance therapy

The likely explanation failure of an iron deficiency anaemia to respond iron therapy in a patient with heavy periods is poor compliance.



[ Q: 14 ] MRCPass - Gastroenterology

A 55 year old man with a history of heavy alcohol intake presents with acute confusion. A diagnosis of hepatic encephalopathy is made and treatment with lactulose is commenced.

*What is its mode of action in this context?*

- 1- Reduces absorption of chlordiazepoxide
- 2- Inhibits proliferation of ammonia forming organisms in the gut
- 3- Absorbed from gut

- 4- Contraindicated in diabetes mellitus
- 5- Causes hypermagnesaemia

#### Answer & Comments

**Answer:** 2- Inhibits proliferation of ammonia forming organisms in the gut

Lactulose is used in patients with cirrhosis/hepatic encephalopathy. It limits the proliferation of ammonia forming gut organisms and increases clearance of protein load in gut. It causes hypomagnesaemia. Chlordiazepoxide absorption is not affected.



#### [ Q: 15 ] MRCPass - Gastroenterology

A 35 year old lady has sudden onset right upper quadrant pain and abdominal distension. She was well until 5 weeks ago, when over several days she rapidly developed abdominal distension and pain. She was also nauseous and vomiting.

On examination, temperature was 37.1°C, her JVP was not raised and breath sounds were clear. Abdominal examination revealed tender hepatomegaly, jaundice and gross ascites. There was also bilateral ankle oedema.

*What is the likely diagnosis?*

- 1- Dubin Johnson syndrome
- 2- Gilbert's syndrome
- 3- Budd Chiari syndrome
- 4- Lymphoma
- 5- Myeloma

#### Answer & Comments

**Answer:** 3- Budd Chiari syndrome

Budd-Chiari syndrome is a condition induced by thrombotic or nonthrombotic obstruction to hepatic venous outflow. The classic clinical triad of abdominal pain, hepatomegaly, and ascites was described by Budd in 1845, and the histopathological features were described by Chiari at the turn of the 20th century.

The syndrome most often occurs in patients with underlying thrombotic diathesis, including myeloproliferative disorders such as polycythemia vera and paroxysmal nocturnal hemoglobinuria, pregnancy, tumors, chronic inflammatory diseases, clotting disorders, and infections.

Doppler ultrasonography, as was used in this case, is the most effective primary initial screening method. CT and magnetic resonance angiography are both more sensitive than ultrasonography. The gold standard for diagnosis is hepatic venography, which should be performed when there is a high index of clinical suspicion and the results of noninvasive testing are either equivocal or negative.



#### [ Q: 16 ] MRCPass - Gastroenterology

A 40 year old man who usually drinks only 2 units of alcohol a day went on an alcohol binge with his friends. On that day, he vomited 10 times and was brought to hospital feeling very unwell. He has not previously had any symptoms of dyspepsia or abdominal pains. During physical assessment, he vomits a large bowlful of blood.

*What is the likely cause of his haemetemesis?*

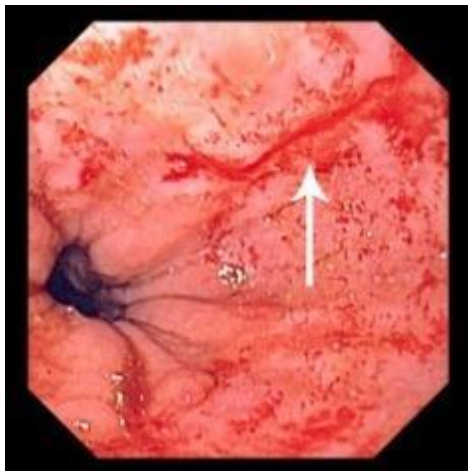
- 1- Oesophageal varices
- 2- Duodenal ulcer
- 3- Mallory Weiss tear
- 4- Gastritis
- 5- Gastric outlet obstruction

#### Answer & Comments

**Answer:** 3- Mallory Weiss tear

A Mallory-Weiss tear occurs in the mucous membrane typically in the lower oesophagus. Mallory-Weiss tears are usually caused by forceful or prolonged vomiting or coughing. They may also be caused by epileptic convulsions.

The tear may be followed by vomiting bright red blood or by passing blood in the stool. The incidence is 4 in 100,000 people.



Mallory Weiss tear



[ Q: 17 ] MRCPass - Gastroenterology

A 30 year old lady has altered bowel habit. At the gastroenterology clinic, her symptoms are reviewed. She has a 2 year history of bloating and abdominal pains. Some weeks she is constipated and during others she has diarrhoea.

*What is the likely diagnosis?*

- 1- Whipple's disease
- 2- Tropical sprue
- 3- Coeliac disease
- 4- Irritable bowel syndrome
- 5- Ulcerative colitis

Answer & Comments

Answer: 4- Irritable bowel syndrome

Weight loss, fevers and blood in the stool are features which suggest a different organic cause other than irritable bowel syndrome.



[ Q: 18 ] MRCPass - Gastroenterology

A 60 lady has symptoms of intermittent abdominal pain and loose stool which have occurred over 1 year.

Investigations reveal:

Hb 8.5 g/dl

MCV 85 fl

WCC  $6 \times 10^9/l$

Iron 11 (14-29)  $\mu\text{mol/l}$

Ferritin 20 (15-200)  $\mu\text{mol/l}$

Folate 2 (3-20)  $\mu\text{g/l}$

*What investigation should be done?*

- 1- Ultrasound of abdomen
- 2- Small bowel biopsy
- 3- Smooth muscle antibodies
- 4- ERCP
- 5- Rigid sigmoidoscopy

Answer & Comments

Answer: 2- Small bowel biopsy

The combined iron and folate deficiency anaemia as well as symptoms suggestive of malabsorption makes coeliac disease a likely diagnosis. Small bowel biopsy may show partial or subtotal villous atrophy. Anti endomysial antibodies will also be helpful.



[ Q: 19 ] MRCPass - Gastroenterology

A 25 year old bartender has had abdominal pains and loose stools for 3 years. He also has symptoms of myalgia and profound fatigue. He mentions that the abdominal pains are often worse after he has bread.

Anti endomysial antibody is positive. An enzyme-linked immunosorbent assay test was conducted and it showed positive reactions to gluten, albumin, lactose, barley, and rye.

*What is the diagnosis?*

- 1- Diverticulosis
- 2- Tropical sprue
- 3- Ulcerative colitis
- 4- Crohn's disease



## 5- Coeliac disease

## Answer &amp; Comments

Answer: 5- Coeliac disease

Signs of coeliac disease include fatigue, weight loss, diarrhoea, arthralgia and myalgia. The "gold standard" for diagnosing celiac disease is through a jejunal mucosal biopsy sample to measure the extent of the damage. Another method is the enzyme-linked immunosorbent assay (ELISA).

Celiac disease patients cannot tolerate gluten, a protein found in the grains wheat, rye, and barley. In order to preserve their gastrointestinal integrity, patients with celiac disease need to take extra precaution when selecting foods.



## [ Q: 20 ] MRCPass - Gastroenterology

A 55 year old man is suspected of having a duodenal ulcer recurrence despite being on omeprazole.

*Which of the following is the most sensitive test in detecting ongoing infection with Helicobacter pylori?*

- 1- The (13C) urea breath test
- 2- The urease test on a gastric biopsy
- 3- A gastric fundal biopsy culture
- 4- Helicobacter pylori serology
- 5- Stool culture

## Answer &amp; Comments

Answer: 1- The (13C) urea breath test

The urea breath test is expensive but has up to 98% sensitivity. The gastric biopsy culture has high specificity but sensitivity of 90%. Histology of gastric biopsy (not listed above) has both high sensitivity and specificity.



## [ Q: 21 ] MRCPass - Gastroenterology

A 35 year old lady presents with abdominal pain to the GP who suspects irritable bowel syndrome.

*Which of the following is a recognised feature of irritable bowel syndrome?*

- 1- Lactase deficiency
- 2- Bloating
- 3- A past history of dysentery
- 4- Late development of carcinoma of the colon
- 5- Diarrhoea but not constipation

## Answer &amp; Comments

Answer: 2- Bloating

Abdominal pain relieved by defecation, bloating, as well as alternating bowel habits is common.



## [ Q: 22 ] MRCPass - Gastroenterology

A 28 year old intravenous drug user complains about severe epigastric pains, nausea and vomiting. He has upper GI endoscopy which shows small areas of ulceration and white plaques.

*Which of the following is the best treatment option?*

- 1- Metronidazole
- 2- Amoxycillin
- 3- Ranitidine
- 4- Fluconazole
- 5- Aciclovir

## Answer &amp; Comments

Answer: 4- Fluconazole

This is a patient with possible HIV who has oesophageal candidiasis. Fluconazole, ketoconazole and itraconazole can be used.



Oesophageal Candidiasis



## [ Q: 23 ] MRCPass - Gastroenterology

A couple develops profuse vomiting after attending a dinner in a chinese restaurant. They ate at 7 pm but became ill early in the next morning.

*What is the likely infective organism?*

- 1- Bacillus cereus
- 2- Salmonella enteritidis
- 3- Bacillus anthracis
- 4- Clostridium perfringens
- 5- E. Coli

## Answer &amp; Comments

Answer: 1- Bacillus cereus

Bacillus Cereus food poisoning is a gastrointestinal intoxication caused by toxins produced by the Bacillus Cereus bacteria. There are two types of toxin, - the Diarrhoeal and the Emetic toxins.

Symptoms with the diarrhoeal toxin are nausea, cramplike abdominal pains and watery diarrhoea.

The diagnosis is confirmed by a laboratory test on a faecal specimen. Bacillus cereus exists in normal bacterial and spore forms in foods. The normal form is inactivated by cooking, but most illness is a result of the multiplication of spores during inadequate refrigeration of

moist cooked protein foods and rice (hence its association with chinese takeaways).



## [ Q: 24 ] MRCPass - Gastroenterology

A 36 year old lady has noticed mild jaundice, worsening joint pains and is complaining of itching on her skin for the past 8 months. On examination, she has palpable hepatomegaly and a bronze pigmentation on her skin.

Her liver function tests show a bilirubin of 25  $\mu\text{mol/l}$ , ALT 100 U/l, ALP 480 U/l. ANA is negative, anti-mitochondrial antibody is positive at 1/320.

*Which of the following medications is helpful?*

- 1- Desferrioxamine
- 2- Hydrocortisone
- 3- Propanolol
- 4- Ursodeoxycholic acid
- 5- Tranexemic acid

## Answer &amp; Comments

Answer: 4- Ursodeoxycholic acid

Primary biliary cirrhosis is described. Liver transplantation does not cure the condition. Histology shows white cell damage to the biliary epithelium with non necrotising granuloma formation in the portal triad.

Ursodeoxycholic acid lowers serum bilirubin and symptoms of itching, and prolongs the progression towards requirement for liver transplantation. IgM levels are particularly high in PBC.



## [ Q: 25 ] MRCPass - Gastroenterology

A 45 year old man has a diagnosis of coeliac disease. He presents with a one month history of intermittent, colicky, central abdominal pain and weight loss of 5 kg. There is positive faecal occult blood.

*What is the most appropriate investigation?*

- 1- Duodenal biopsy
- 2- Barium enema
- 3- Surgical exploration
- 4- CT scan of abdomen
- 5- Colonoscopy

#### Answer & Comments

**Answer:** 5- Colonoscopy

Colonoscopy is necessary to exclude a colonic carcinoma. There is a relatively high prevalence of colorectal neoplasia among older patients with coeliac disease who can present with iron deficiency or altered bowel habit.



#### [ Q: 26 ] MRCPass - Gastroenterology

A 60 year old man has symptoms of lethargy and vomiting. He drinks 10 pints of beer a day. He was started on an intravenous glucose infusion and chlorthalidone. For a day, he symptomatically improved. However, the next day, he became confused and started vomiting several times. He also had diplopia and was unable to stand.

*What is the likely diagnosis?*

- 1- Delirium tremens
- 2- Hepatic encephalopathy
- 3- Cerebellar stroke
- 4- Vitamin B deficiency
- 5- Pancreatitis

#### Answer & Comments

**Answer:** 4- Vitamin B deficiency

Wernicke's encephalopathy is a neurologic disorder of acute onset caused by a thiamine deficiency. The condition is characterized by ocular abnormalities, ataxia, and a global confusional state.

Wernicke's encephalopathy results from a deficiency in vitamin B-1 (ie, thiamine). The

episode may have been precipitated by intravenous dextrose administration which exhausted his vitamin B reserves. B vitamins should be administered to all alcoholic patients requiring dextrose.



#### [ Q: 27 ] MRCPass - Gastroenterology

A 30 year old psychology lecturer has deranged liver function tests. She also has jaundice, pruritus and xanthelasmata.

Blood tests reveal elevated levels of conjugated bilirubin, alkaline phosphatase, gamma-glutamyltranspeptidase and positive anti-mitochondrial antibody. She seeks advice about the associations of the disease.

*Which one of the following is likely to be associated?*

- 1- Raised IgA
- 2- Osteomalacia
- 3- Hyperparathyroidism
- 4- Nephrotic syndrome
- 5- Vitamin A deficiency

#### Answer & Comments

**Answer:** 2- Osteomalacia

The diagnosis is primary biliary cirrhosis (PBC). It is based on a combination of findings including cholestatic liver enzymes, a positive antimitochondrial antibody (AMA), and characteristic liver biopsy findings. Elevated serum alkaline phosphatase of liver origin is the most common laboratory finding. Fatigue, jaundice, pruritus and xanthelasmata are other features of primary biliary cirrhosis.

In the disease, IgM is raised. Primary biliary cirrhosis is associated with autoimmune conditions such as scleroderma and Sjogren's syndrome. These conditions are also associated with distal RTA (type 1). There is xanthelasma formation due to impaired cholesterol excretion and also osteomalacia due to impaired Vitamin D absorption.





## [ Q: 28 ] MRCPass - Gastroenterology

A 25 year old man presents with pain over the right side of the abdomen, diarrhoea, poor appetite and weight loss. He is pyrexial with a temperature of 39°C. He has oral aphthous ulcers and a tender right lower quadrant in the abdomen. Rectal examination is normal.

His Hb is 12.5g/dl, WCC  $14 \times 10^9/L$  and platelets  $550 \times 10^9/L$ . Urea is 8  $\mu\text{mol/l}$  and creatinine is 90  $\mu\text{mol/l}$ , CRP is 105 mg/l.

*Which of the following is the best test to confirm the diagnosis?*

- 1- Stool cultures
- 2- Barium meal and follow through
- 3- Ultrasound of abdomen
- 4- Colonoscopy
- 5- Surgical laparotomy

## Answer &amp; Comments

Answer: 2- Barium meal and follow through

The likely diagnosis is Crohn's disease and a barium follow through is the best test to confirm this. Behcet's disease and Yersinia colitis can also present with raised inflammatory markers, oral ulceration and right sided abdominal pathology.



Strictures seen on the Barium Follow through in Crohn's disease



## [ Q: 29 ] MRCPass - Gastroenterology

A 52 year old male presents with general weakness. He drinks approximately 20 units of alcohol each week and smokes 10 cigarettes daily. Examination reveals jaundice, numerous spider naevi and he has a temperature of 37.5°C. Abdominal examination reveals hepatosplenomegaly.

Investigations show :

Bilirubin 140 micromol/L (1-22)

Alkaline phosphatase 525 iu/l (45-105)

AST 178 iu/l (1-31)

Albumin 28 g/L (37-49)

Hepatitis B virus surface antigen - negative

Hepatitis B virus e antigen - negative

Hepatitis B virus e Antibody- positive

Hepatitis B core Antigen (anti-HBc) - positive

Hepatitis B virus DNA - undetectable

*What is the likely diagnosis?*

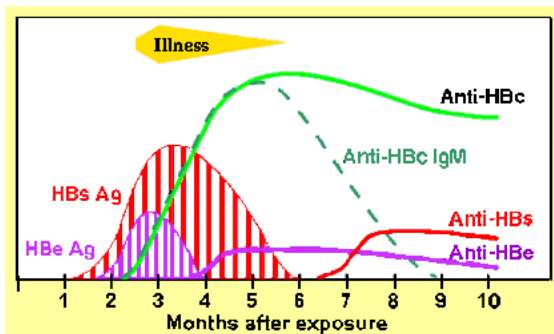
- 1- Chronic hepatitis D (delta) infection
- 2- New hepatitis A infection

- 3- Alcoholic liver disease
- 4- Chronic hepatitis B infection
- 5- New hepatitis C infection

#### Answer & Comments

**Answer:** 4- Chronic hepatitis B infection

A negative HbsAg and HbeAg, along with positive hepatitis B antibodies (anti-HBc) would suggest past or chronic infection.



#### [ Q: 30 ] MRCPass - Gastroenterology

A 35 year old man presents with 2 bowls full of haemetemesis. He drinks 10 pints of beer a day and has done so for 10 years. Upper GI endoscopy reveals oesophageal varices.

*Which of the following is effective in reducing the rates of rebleeding in the future?*

- 1- Lisinopril
- 2- Propanolol
- 3- Simvastatin
- 4- Ranitidine
- 5- Naproxen

#### Answer & Comments

**Answer:** 2- Propanolol

Beta blockers (propanolol, nadolol), nitrates, vasopressin analogues and somatostatin analogues can be used for reducing rebleeding in oesophageal varices.



#### [ Q: 31 ] MRCPass - Gastroenterology

A 30 year old woman who has been on the contraceptive pill presents with abdominal pain and distension of 5 days duration. On examination she has no stigmata of chronic liver disease. She has distended veins over the anterior abdominal wall. She also has ascites, an enlarged tender palpable liver with absent hepato-jugular reflux.

Her ankles are oedematous.

*What is the diagnosis?*

- 1- Congestive cardiac failure
- 2- Antiphospholipid syndrome
- 3- Fatty liver
- 4- Budd Chiari syndrome
- 5- Pulmonary hypertension

#### Answer & Comments

**Answer:** 4- Budd Chiari syndrome

Budd-Chiari syndrome is thrombosis of the hepatic vein, the major vein that leaves the liver. Most patients have an underlying thrombotic tendency. About 10% have polycythemia vera, and about 10% have been on the OCP. The most common symptoms in Budd-Chiari syndrome are ascites and jaundice.



#### [ Q: 32 ] MRCPass - Gastroenterology

A 25 year old woman with cystic fibrosis presents with abdominal pain. The abdominal pain is colicky and localised in the lower abdomen.

On examination, she was pyrexial and tachycardic. Her abdomen was distended. There was guarding and bowel sounds were present.

*Which of the following is likely to be the cause?*

- 1- Renal Calculi
- 2- Ulcerative colitis

3- Meconium Ileus Equivalent Syndrome

4- Pyelonephritis

5- Irritable Bowel Syndrome

#### Answer & Comments

**Answer:** 3- Meconium Ileus Equivalent Syndrome

Meconium Ileus is the earliest clinical manifestation of cystic fibrosis (CF) and occurs in approximately 16% of patients with CF. Meconium in patients with ileus has higher protein and lower carbohydrate concentration than that in control populations.

Signs of peritonitis include tenderness, abdominal wall edema, distension, and clinical evidence of sepsis. A palpable mass may indicate pseudocyst formation. Surgical exploration is indicated for patients with progressive distension, signs of peritonitis, or clinical deterioration.

Complicated Meconium Ileus requires resection more often than simple cases and always requires temporary stomas.



#### [ Q: 33 ] MRCPass - Gastroenterology

A 40 year old woman has previously had a right hemicolectomy and resection of 30 cms of terminal ileum for ileocaecal Crohn's disease. She has persistent diarrhoea, which is not explosive. She does not have abdominal pain, bloating, or loss of weight. Investigations have failed to demonstrate evidence of recurrent Crohn's disease.

*Which is the best therapy for the symptoms?*

- 1- Prednisolone
- 2- Mesalazine
- 3- Azathioprine
- 4- Cholestyramine
- 5- Loperamide

#### Answer & Comments

**Answer:** 4- Cholestyramine

The patient has had resection of the terminal ileum and the cause of the diarrhoea is likely to be Bile Acid Malabsorption (BAM). Bile acid sequestrants such as cholestyramine should help the symptoms of persistent diarrhoea.



#### [ Q: 34 ] MRCPass - Gastroenterology

A 45 year old man has had a 5 year history of severe sharp, epigastric pains and diarrhoea. He gets 2-3 episodes of these symptoms a day. His GP has prescribed proton pump inhibitors which has helped partly, but he still complains that the symptoms are severe.

*Which one of the following might confirm the diagnosis?*

- 1- Amylase
- 2- ERCP
- 3- C-peptide
- 4- Insulin
- 5- Gastrin level

#### Answer & Comments

**Answer:** 5- Gastrin level

The diagnosis is likely to be Zollinger Ellison syndrome which is frequently secondary to a gastrinoma. Gastrin levels are significantly elevated. The secretin test can help to confirm the diagnosis. There is increased gastrin elevation (greater than 200 pg/mL) in a positive test after secretin is given intravenously.

There is an association with the MEN 1 syndrome, so calcium levels should be checked (to screen for a parathyroid adenoma).



## [ Q: 35 ] MRCPass - Gastroenterology

A 42 year old man has a diagnosis of Ulcerative Colitis. He was incidentally found to have positive anti smooth muscle antibodies by the GP who sent an autoimmune screen.

*Which is the next recommended test for this patient?*

- 1- CT of the abdomen
- 2- Colonoscopy
- 3- ESR
- 4- Endoscopy
- 5- Liver function tests

## Answer &amp; Comments

Answer: 5- Liver function tests

The features are suggestive of autoimmune hepatitis. Liver function tests may demonstrated elevated levels of bilirubin, AST and ALT. A liver biopsy may then be warranted.



## [ Q: 36 ] MRCPass - Gastroenterology

A 35 year old man has chronic liver disease secondary to hepatitis. He comes on having had a depressive episode but also feels tired and unwell. He reveals that he has had a bottle of wine a day for a week.

On examination he has gross abdominal distension. A peritoneal tap is done. Results from the tap show that it has albumin of 25 g/l, LDH of 320 U/l, glucose 3.5 mmol/l (serum glucose 6.5) and a white cell count of 700 per mm<sup>3</sup> (90% neutrophils).

*What is the diagnosis?*

- 1- Acute reactivation of hepatitis B
- 2- Tuberculous peritonitis
- 3- Alcoholic liver disease decompensation
- 4- Chylous ascites
- 5- Spontaneous bacterial peritonitis

## Answer &amp; Comments

Answer: 5- Spontaneous bacterial peritonitis

A white cell count of  $> 350 \text{ mm}^3$  is diagnostic of spontaneous bacterial peritonitis. There is underlying cirrhotic liver disease and this should always be considered related to decompensation.



## [ Q: 37 ] MRCPass - Gastroenterology

A 60 year old male presents with a two month history of shortness of breath, weight loss and lethargy. He looks pale and is jaundiced.

Investigations show :

Haemoglobin 6 g/dL

MCV 106 fL

White cell count  $2.2 \times 10^9/\text{L}$

Platelets  $60 \times 10^9/\text{L}$

Urinalysis: Increased urobilinogen.

*What is the next appropriate test?*

- 1- Coomb's test
- 2- Colonoscopy
- 3- Vitamin B<sub>12</sub> concentration
- 4- Bone marrow aspirate
- 5- Reticulocyte count

## Answer &amp; Comments

Answer: 3- Vitamin B<sub>12</sub> concentration

The clinical picture is one of megaloblastic anaemia. B12 and folate measurement is the first test to confirm this, and then other tests such as blood film and marrow aspirates can be done to investigate the cause.



## [ Q: 38 ] MRCPass - Gastroenterology

A 30 year old man had previous bowel resection for acute abdomen. He continues to have frequent episodes of bloody diarrhea and abdominal pain.

*Which one of the following is an X-ray change which suggests Ulcerative Colitis?*

- 1- Cobblestones
- 2- Skip lesions
- 3- Loss of haustral pattern
- 4- Rose thorn ulcers
- 5- Strictures

#### Answer & Comments

**Answer:** 5- Strictures

Loss of haustral pattern, lead pipe, and shortened colon on the X ray, suggests ulcerative colitis.

In Crohn's disease, transmural inflammation with formation of fissures, ulcers and granulomata, and cobblestone appearance are seen.



Loss of haustral pattern in Ulcerative Colitis (X ray)



#### [ Q: 39 ] MRCPass - Gastroenterology

A 45 year old asian man presents with epigastric pains of burning nature. This was worst at night.

He was prescribed Gaviscon for a year and but this did not relieve his symptoms entirely. He had an endoscopy which did not show any significant abnormalities 3 months ago.

*Which is the best test for further investigation?*

- 1- Repeat endoscopy
- 2- Urease breath test

- 3- Gastric biopsy
- 4- 24 hour oesophageal pH study
- 5- Amylase

#### Answer & Comments

**Answer:** 4- 24 hour oesophageal pH study

24 hour oesophageal pH study is the investigation of choice for severe symptoms suggestive of oesophageal reflux.



#### [ Q: 40 ] MRCPass - Gastroenterology

A 30 year old man has had a 10 year history of chronic diarrhea. He has developed episodes of abdominal pain after eating wheat products, and is suspected of having celiac disease.

*Which one of the following is most likely to be associated?*

- 1- Increased serum ferritin
- 2- Osteomalacia
- 3- Anti double stranded DNA antibodies
- 4- Anal ulcers
- 5- Anti-Ro antibodies

#### Answer & Comments

**Answer:** 2- Osteomalacia

Celiac disease usually presents with iron deficiency. Poor calcium absorption can result in osteomalacia. Celiac disease can cause mouth ulcers. Anti gliadin and anti endomysial antibodies are associated.



#### [ Q: 41 ] MRCPass - Gastroenterology

A 45 year old lady has rectal bleeding during bowel movements for 10 weeks. She has severe lower abdominal pains. Her appetite is poor and she has also lost 7 kg in weight. On examination she has a tender left lower abdomen and loud bowel sounds. Her



abdomen is not distended. Rectal examination reveals small streak of blood.

Investigations:

Hb is 11.1g/dl                      WCC  $13.5 \times 10^9/L$   
platelets  $600 \times 10^9/L$         urea 6 mmol/l  
creatinine 100  $\mu\text{mol/l}$     CRP 80 mg/l

A rigid sigmoidoscopy shows inflammatory changes with ulceration and areas of bleeding.

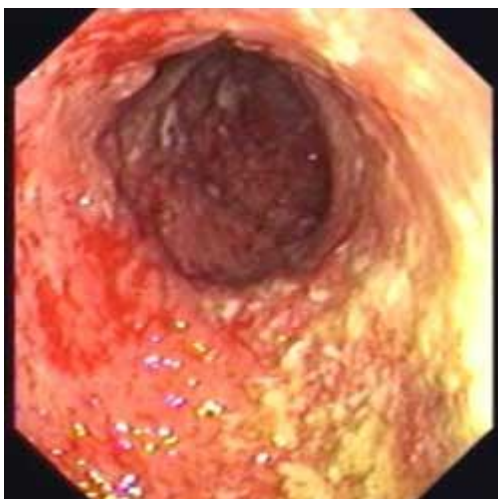
*Which of the following treatment options is the best at present?*

- 1- Intravenous hydrocortisone
- 2- Amoxycillin and metronidazole
- 3- 5-aminosalicylate given intravenously
- 4- Anti-TNF $\alpha$  antibody infusion
- 5- Intravenous gamma globulin

#### Answer & Comments

Answer: 1- Intravenous hydrocortisone

The features are consistent with colitis, probably on a background of likely ulcerative colitis. Steroids are used in severe cases of colitis. If there are mild episodes of colitis then 5-aminosalicylates such as sulfasalazine can be used. Anti TNF  $\alpha$  antibody is used for severe Crohn's disease.



Ulcerative Colitis



#### [ Q: 42 ] MRCPass - Gastroenterology

A 45 year old man is referred to the hospital for assessment. Over the past year he has been complaining of joint pains and was thought to have osteoarthritis. 6 months earlier, he noted gradual onset of fatigue, decreased libido, and erectile dysfunction. He has also been progressively breathless. He did not have a cough, a fever, night sweats, or visual changes.

On physical examination, the patient was a thin but well-developed man who was not in distress. The blood pressure was 100/60 mm Hg, and the heart rate 88 beats per minute. The skin was tanned, with no spider angiomas or palmar erythema. The abdominal examination revealed palpable hepatomegaly and he was mildly jaundiced. The testicles were each estimated to be 18 ml without masses, and the prostate examination was normal.

Blood results show :

sodium 135 mmol/l  
potassium 4.5 mmol/l  
urea 5 mmol/l  
creatinine 100  $\mu\text{mol/l}$   
ALT 120 (5-35) U/l  
AST 135 (1-31) U/l  
ALP 132(20-120) U/l  
Bilirubin 36 (1-22)  $\mu\text{mol/l}$   
Albumin 38 (37-49) g/l

*What is the diagnosis?*

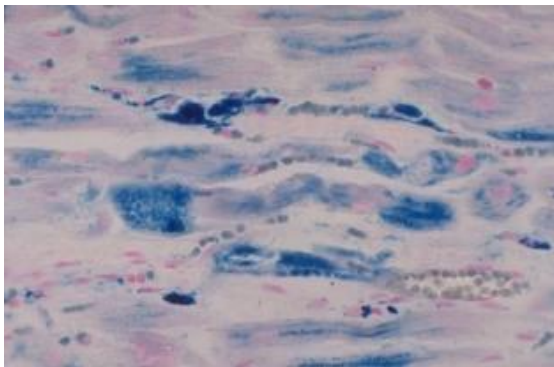
- 1- Multiple Endocrine Neoplasia type II
- 2- Carcinoid syndrome
- 3- Primary biliary cirrhosis
- 4- Haemochromatosis
- 5- Amyloidosis

#### Answer & Comments

Answer: 4- Haemochromatosis

A combination of hepatomegaly, diabetes, and hyperpigmentation, reflecting parenchymal iron loading of the liver, pancreas, and skin is suggestive of haemochromatosis.

In haemochromatosis, joint deposition of iron occurs, causing arthropathy. Increased iron deposition in the skin stimulates increased melanin production, and may cause a bronze / tan skin. There is an increased incidence in males. Haemochromatosis is a recognised cause of restrictive cardiomyopathy which has caused this patient to be breathless.



Myocardial cells with excessive iron deposition (stained blue)



[ Q: 43 ] MRCPass - Gastroenterology

An obese 55 year old woman with Type II diabetes is referred as she has been found to have raised ALT and AST levels. She does not have a history of pruritus or jaundice. She is not on any medication and does not take alcohol. On examination, she has a smooth hepatomegaly of 3 cm edge. There are no xanthelasmata and she does not have signs of chronic liver disease.

*What is the likely diagnosis?*

- 1- Non-alcoholic fatty liver disease
- 2- Neuroacanthocytosis
- 3- Chronic hepatitis
- 4- Hepatocellular carcinoma
- 5- Hepatorenal syndrome

Answer & Comments

Answer: 1- Non-alcoholic fatty liver disease

This diagnosis is non-alcoholic fatty liver disease. The mildest type is simple fatty liver (steatosis), an accumulation of fat within the liver that usually causes no liver damage. This disease is usually nonprogressive and rarely causes liver cirrhosis. A potentially more serious type, nonalcoholic steatohepatitis (NASH), is associated with liver fibrosis. Nonalcoholic fatty liver disease affects more women than men, and is associated with insulin resistance/diabetes and obesity.



[ Q: 44 ] MRCPass - Gastroenterology

A 46 year old man is known to have alcoholic liver cirrhosis. He drinks 60 units of alcohol per week. He presents unwell and confused. Temperature is 38 C and blood pressure is 96/50 mmHg. Abdominal palpation reveals hepatomegaly and ascites.

*What should be done next?*

- 1- Albumin infusion
- 2- Blood cultures
- 3- Diagnostic ascitic tap
- 4- Liver biopsy
- 5- Transjugular intrahepatic shunting

Answer & Comments

Answer: 3- Diagnostic ascitic tap

There is a high chance of spontaneous bacterial peritonitis in this patient with cirrhotic liver disease. When analysis of ascitic fluid reveals a white blood cell count of more than 250 cells/cc, SBP is likely. Cefotaxime should be commenced after a tap is done and blood cultures are sent.



[ Q: 45 ] MRCPass - Gastroenterology

A 60 year old man complains of a 6 month history of lethargy, fever, weight loss,

arthralgia and diarrhoea. Jejunal biopsy reveals flattened mucosa with evidence of periodic acid Schiff (PAS) positive macrophages.

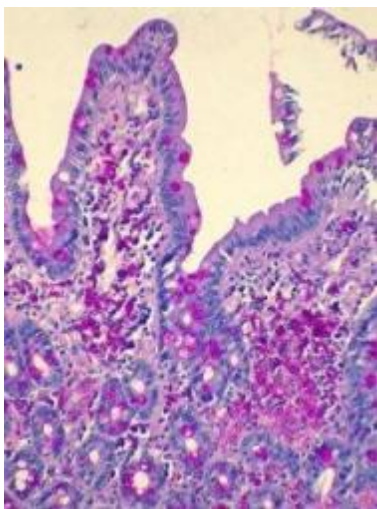
*What is the diagnosis?*

- 1- Tuberculosis
- 2- Tropical sprue
- 3- Whipple's disease
- 4- Helminthic infection
- 5- Ulcerative colitis

#### Answer & Comments

Answer: 3- Whipple's disease

Whipple's disease can affect any organ, but predominantly affects the small bowel, causing a malabsorption syndrome. The organism (*Tropheryma whipplei*) can be identified both between and within abnormal macrophages, which stain with PAS. Treatment is with a prolonged course of antibiotics eg. iv penicillin and streptomycin 2 weeks, followed by 1 year of doxycycline.



Histology showing Whipple's disease



[ Q: 46 ] MRCPass - Gastroenterology

A 45 year old man has painless jaundice. He has pale stools and dark urine. On examination he is deeply jaundiced and has scratch marks all over his body. On

palpation of the abdomen Courvoisier's sign is positive.

*Where is the level of biliary obstruction?*

- 1- Bile canaliculi
- 2- Intrahepatic ducts
- 3- Hepatic duct
- 4- Accessory duct
- 5- Common bile duct

#### Answer & Comments

Answer: 5- Common bile duct

Courvoisier's sign is a palpable distended gall bladder on examination of the abdomen. Obstruction below the level of the cystic duct causes this, probably due to carcinoma of the pancreas.



[ Q: 47 ] MRCPass - Gastroenterology

A 35 year old woman presents with abdominal pain, weight loss, diarrhoea and mouth ulcers. Full blood count reveals normocytic normochromic anaemia, inflammatory markers are raised, and biochemical investigation reveals a raised alkaline phosphatase. Barium followthrough shows terminal ileal inflammatory disease.

*Long term remission may be maintained by the use of which of the following drugs?*

- 1- Mesalazine
- 2- Prednisolone
- 3- Azathioprine
- 4- Ciclosporin
- 5- Infliximab

#### Answer & Comments

Answer: 3- Azathioprine

Remission of Crohn's disease may be achieved by the use of steroids, elemental diet, surgery or Infliximab. Mesalazine may maintain remission if induction has been achieved by



surgery and if an 8-week course of metronidazole is administered. In other scenarios, the most useful drug to maintain remission is azathioprine.



[ Q: 48 ] MRCPass - Gastroenterology

A 55 year old woman presents with an 2 month history of diarrhoea with no blood or mucus, colicky abdominal pain, vomiting and 1 stone weight loss.

She has a history of arthritis for which she takes diclofenac regularly. On examination she was afebrile and looked pale. The abdomen was diffusely tender but soft. Bowel sounds were normal and rectal examination was normal.

Investigations showed: Hb 8.5 g/dL, MCV 68 fl, CRP 160, coeliac antibodies negative. Colonoscopy revealed several areas of superficial ulceration in the ascending colon. Biopsies from these areas showed non-specific inflammation.

*What is the likely diagnosis?*

- 1- Ulcerative colitis
- 2- Crohn's disease
- 3- Non-steroidal anti-inflammatory drug colopathy
- 4- Coeliac disease
- 5- Tropical sprue

Answer & Comments

Answer: 3- Non-steroidal anti-inflammatory drug colopathy

NSAID-colopathy can mimic Crohn's and ulcerative colitis. Presenting symptoms and signs include iron-deficiency anaemia and crampy abdominal pain, alteration of bowel habit, weight loss, nausea and vomiting. Symptoms usually resolve with discontinuation of the drugs.



[ Q: 49 ] MRCPass - Gastroenterology

A 65 year old ex-publican presented to his GP complaining of difficulty swallowing for the past two months. The difficulty started several weeks ago with food sticking. He also complained more recently of pain on swallowing.

An OGD and biopsy confirms adenocarcinoma of the oesophagus.

*Which underlying condition is associated?*

- 1- Alcoholism
- 2- Oesophageal candidiasis
- 3- Ulcerative colitis
- 4- Plummer vinson syndrome
- 5- Tropical sprue

Answer & Comments

Answer: 4- Plummer vinson syndrome

Plummer Vinson syndrome causes iron deficiency anaemia and post cricoid oesophageal web and achalasia.

There is an increased incidence of oesophageal cancer.



Barium Swallow showing a stricture indicating oesophageal cancer



## [ Q: 50 ] MRCPass - Gastroenterology

A 40 year old man has recurrent episodes of bloody diarrhea and lower abdominal cramping. Histologic evaluation of a biopsy from flexible sigmoidoscopy reveals acute inflammation without architectural distortion consistent with ulcerative colitis.

*Which of the following conditions is associated with the condition?*

- 1- Gallstones
- 2- Sclerosing cholangitis
- 3- Erythema nodosum
- 4- Renal calculi
- 5- Vitamin B<sub>12</sub> deficiency

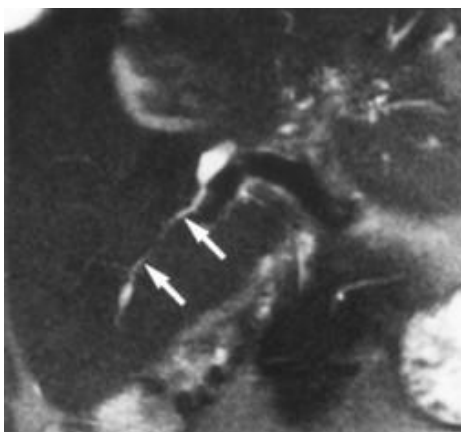
## Answer &amp; Comments

Answer: 2- Sclerosing cholangitis

75% of patients with primary sclerosing cholangitis have inflammatory bowel disease, especially ulcerative colitis.

Primary sclerosing cholangitis (PSC) is a chronic cholestatic liver disease of unknown etiology. In the absence of underlying bile duct abnormalities, a generalized beading and stenosis of the intrahepatic and extrahepatic biliary tree characterize PSC. PSC is usually progressive, leading to cirrhosis, portal hypertension, and liver failure.

Typically, a cholestatic jaundice picture is seen with the liver function tests.



## [ Q: 51 ] MRCPass - Gastroenterology

A 40 year old woman presents with abdominal pain and watery diarrhoea. She has joint pains and also has been investigated for infertility. She was given a proton pump inhibitor by her GP and this helped to relieve some of her symptoms.

Investigations show :

Haemoglobin 13 g/dl

Calcium 2.90 mmol/l

Albumin 40 g/l

Phosphate 0.8 mmol/l

CRP 10 mg/l

Endoscopy - multiple small duodenal ulcers

H. pylori test - negative

*What is the likely diagnosis?*

- 1- NSAID induced duodenal ulceration
- 2- Multiple endocrine neoplasia
- 3- Small Bowel Lymphoma
- 4- Coeliac disease
- 5- Addison's disease

## Answer &amp; Comments

Answer: 2- Multiple endocrine neoplasia

MEN 1 would fit the clinical diagnosis. The abdominal symptoms are likely to be due to gastrinoma and hypercalcaemia due to parathyroid adenoma. Infertility could be explained by a prolactinoma.



## [ Q: 52 ] MRCPass - Gastroenterology

A 65 year man who is on warfarin for atrial fibrillation is complaining of worsening breathlessness over the last 2 months. On examination, he has an irregular heart beat, blood pressure of 110 / 60 mmHg and he looked pale.

There was no evidence of organomegaly.

Investigations show:

Haemoglobin 8.5 g/dL

MCV 70 fL

PLT 160 x 10<sup>9</sup>/L

His upper gastrointestinal tract endoscopy and colonoscopy were normal.

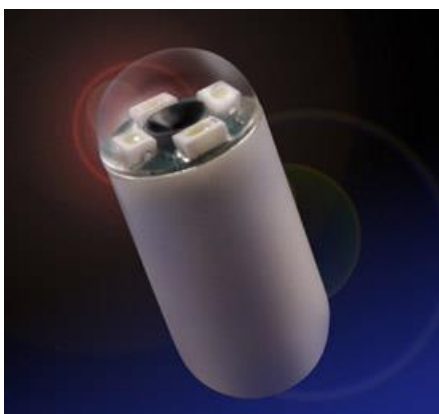
*What is the next best investigation?*

- 1- Barium enema
- 2- Small bowel enema
- 3- Capsule endoscopy
- 4- Mesenteric angiography
- 5- CT abdomen

#### Answer & Comments

Answer: 3- Capsule endoscopy

There is microcytic anaemia. In this case, there is still a possibility of angiodysplasia involving the small bowel which may not have been identified with OGD or colonoscopy. With Capsule Endoscopy, a patient Swallows a small pill which emits a radio frequency which is picked up by a sensor that the patient wears over several hours. Images are then downloaded as a continuous movie . At present, this technique is ideal for patients with suspected GI bleeding within the small bowel.



[ Q: 53 ] MRCPass - Gastroenterology

A 50 year old man presents with a history of intermittent, but slowly progressive dysphagia for both solids and liquids. He has

pain on swallowing and has regurgitation of food Swallowed several hours earlier. He has not lost weight. Barium Swallow demonstrates proximal dilatation of the oesophagus and failure of relaxation of the lower oesophageal sphincter.

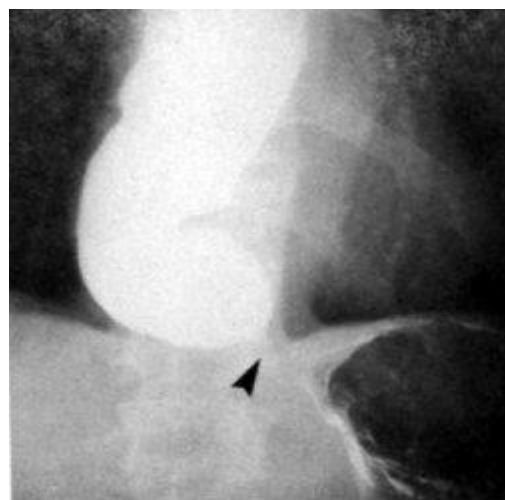
*Which treatment option is best in the long term?*

- 1- Sengstaken Blakemore tube
- 2- Amyl nitrite
- 3- Oesophageal myotomy
- 4- Intraspincteric botulinum toxin
- 5- Terlipressin

#### Answer & Comments

Answer: 3- Oesophageal myotomy

The diagnosis is achalasia of the cardia. This is a functional obstruction at the lower oesophageal sphincter caused by a failure of relaxation. Heller's oesophageal myotomy is the best treatment option, it can be done via an abdominal incision or laparoscopically.



Barium Swallow - Achalasia



[ Q: 54 ] MRCPass - Gastroenterology

A 35 year old woman presented with a 5-month history of weight loss (half a stone), anorexia and generalized pruritus. On examination, she was jaundiced with

numerous spider naevi, scratch marks, palmar erythema and hepatosplenomegaly.

Investigations showed :

Haemoglobin: 9.5 g/dl

WCC:  $7 \times 10^9/l$

erythrocyte sedimentation rate: 140mm/h

serum albumin: 41 g/l

serum bilirubin: 34  $\mu\text{mol/l}$

alanine transaminase: 152 iu/l

aspartate transaminase: 164 iu/l

alkaline phosphatase: 83 iu/l

The prothrombin time was prolonged but urea and electrolytes, calcium and phosphate concentrations were normal.

*In addition to the above findings, which one of the following would make the diagnosis of autoimmune hepatitis likely ?*

- 1- HLA DR2
- 2- HLA DR6
- 3- Anti neutrophil cytoplasmic antibodies
- 4- Antimitochondrial antibodies
- 5- High IgG

#### Answer & Comments

Answer: 5- High IgG

Antinuclear antibodies (ANA) of IgG class are frequently strongly positive (e.g. to a titre of 1/10000) in autoimmune hepatitis. Antibodies to LKM, dsDNA and to smooth muscle are also good markers.

HLA-DR3 and DR4 antigen are associated with autoimmune hepatitis.



[ Q: 55 ] MRCPass - Gastroenterology

A 28 year old lady is 34 weeks pregnant. This is her second pregnancy, the first pregnancy was uneventful. She has pruritus and on examination, was mildly jaundiced. Liver function tests showed:

ALT 75 (5-35) U/l

AST 70 (1-31) U/l

ALP 350 (20-120) U/l

Bilirubin 70 (1-22)  $\mu\text{mol/l}$

Albumin 38 (37-49) g/l

*What is the likely diagnosis?*

- 1- Primary biliary cirrhosis
- 2- Gallstones
- 3- Cholangiocarcinoma
- 4- Intrahepatic cholestasis of pregnancy
- 5- Viral hepatitis

#### Answer & Comments

Answer: 4- Intrahepatic cholestasis of pregnancy

Intrahepatic cholestasis of pregnancy usually presents during the third trimester, at a mean of 30 weeks of gestation. The characteristic symptom is itching (pruritus gravidarum), which involves the trunk, extremities, palms, and soles. The itching may be severe, and it is often worse at night.

Jaundice develops in 20 to 60 percent of women one to four weeks after the onset of itching. The features of obstructive jaundice, including pale stools and dark urine, may be present, but patients do not have constitutional symptoms. Intrahepatic cholestasis is associated with an increased risk of prematurity and stillbirth. Women with intrahepatic cholestasis should be treated at centers capable of caring for premature infants. Cholestyramine, given in divided doses totaling 10 to 12 g per day, may help relieve pruritus.



[ Q: 56 ] MRCPass - Gastroenterology

A 35 year old secretary has noticed jaundice over the last several months. Around this time, she has also noticed itchiness all over her body. On examination, she has

xanthelasma around her eyes and palpable hepatomegaly.

Her blood tests show Bilirubin 110  $\mu\text{mol/l}$  (1-22), AST of 240 U/l (1-30) and ALP of 650 U/l (5-35 U/l). AMA is positive.

*If she has primary biliary cirrhosis, what is the liver biopsy likely to show ?*

- 1- Granulomatous changes of hepatocytes
- 2- Fatty changes of the liver parenchyma
- 3- Piecemeal necrosis and fibrosis around portal veins
- 4- Collagen layering around bile ducts
- 5- White cell infiltrates causing biliary duct destruction

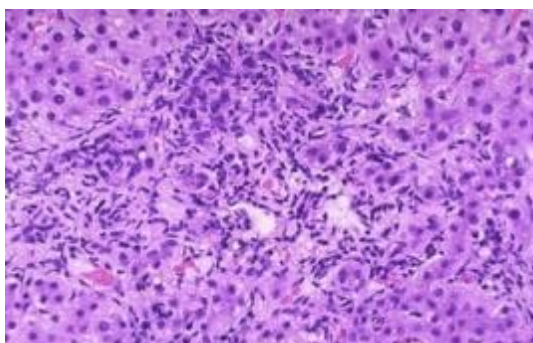
#### Answer & Comments

Answer: 5- White cell infiltrates causing biliary duct destruction

Inflammatory changes with biliary destruction are suggestive of primary biliary cirrhosis. Granulomatous changes would suggest sarcoidosis or Wegener's granulomatosis. Piecemeal necrosis and fibrosis suggests chronic hepatitis.

Primary biliary cirrhosis can present with jaundice, pruritus, xanthelasma and signs of chronic liver disease.

Antibodies (Anti Mitochondrial Antibody) and liver biopsy are helpful to distinguish between the PBC, autoimmune hepatitis and primary sclerosing cholangitis.



Histology showing destruction of bile ductules within the triads of the liver in PBC



#### [ Q: 57 ] MRCPass - Gastroenterology

A 45 year old man presents with an episode of severe haematemesis following a heavy meal. He also has had a day's history of malena. On examination, he has swelling around the gastric region and abdomen.

*What is the most likely diagnosis?*

- 1- Gastric ulcer
- 2- Mallory weiss tear
- 3- Oesophageal varices
- 4- Oesophageal web
- 5- Pancreatic carcinoma

#### Answer & Comments

Answer: 3- Oesophageal varices

Post prandial swelling suggests oesophageal varices (portal hypertension).

Postprandial hyperemia leads to an increase in portal pressure that may contribute to esophageal variceal rupture.



#### [ Q: 58 ] MRCPass - Gastroenterology

A 30 year old lady presents with bilateral swelling and discomfort around her face. This caused her pain when she is chewing. It started 2 days ago and she also has mild fever and headache. She mentioned she had been in contact with someone with a similar illness 2 weeks ago. On examination, she has bilateral parotid enlargement which are tender.

*Which of the following is a likely cause?*

- 1- Myotonic dystrophy
- 2- Marfan's syndrome
- 3- Myeloma
- 4- Carotid artery stenosis
- 5- Mumps



## Answer &amp; Comments

**Answer:** 5- Mumps

There are many causes of parotid swellings. Viruses include mumps, coxsackie A virus, parainfluenzae virus, CMV and varicella zoster virus. Hypothyroidism can do so, but not hypoparathyroidism.

The incubation period for mumps is usually 18 to 21 days. Mumps is caused by a paramyxovirus, and are spread from person to person by saliva droplets or direct contact with articles that have been contaminated with infected saliva. The parotid glands (the salivary glands between the ear and the jaw) are usually involved. Unvaccinated children between the ages of 2 and 12 are most commonly infected, but the infection can occur in other age groups. Orchitis (swelling of the testes) occurs in 10-20% of infected males, but sterility only rarely ensues; a viral meningitis occurs in about 5% of those infected.



Parotid Swelling



[ Q: 59 ] MRCPass - Gastroenterology

A 50 year old man has a history of Crohn's colitis. He has relapses despite being on mesalazine. The last relapse, treated high doses of steroids, was complicated by gastrointestinal bleeding.

Investigations show :

Haemoglobin 11.8 g/L

MCV 75 fL

MCH 25 pg (28-32)

White cell count  $9 \times 10^9/L$

Platelets  $350 \times 10^9/L$

Serum total protein 72 g/L (61-76)

Serum albumin 28 g/L (37-49)

Serum CRP 45 mg/L (<10)

Abdo X ray is normal

*Which of the following is the most appropriate management?*

1- A trial of oral metronidazole

2- Treatment with azathioprine

3- Treatment with oral budesonide

4- Ileostomy

5- Total colectomy

## Answer &amp; Comments

**Answer:** 2- Treatment with azathioprine

This patient has not responded to first line therapy. The next step is a trial of azathioprine, which used as a steroid sparing agent. This particularly so when there are side effects from previous steroid treatment.

Metronidazole is rarely effective in the treatment of active Crohn's colitis. Given that Crohn's disease can recur following surgery, surgery should not be undertaken without a trial of second line therapies such as azathioprine first.



[ Q: 60 ] MRCPass - Gastroenterology

A 35 year old lady has developed worsening pruritus and jaundice over the past year. Investigations revealed a positive antimitochondrial antibody and a liver biopsy confirmed the diagnosis of primary biliary cirrhosis.

*Which of the following is associated with the condition?*

- 1- Raised IgA
- 2- Male
- 3- Xanthelasma
- 4- Anti gliadin antibody
- 5- Diverticular disease

#### Answer & Comments

**Answer:** 3- Xanthelasma

Primary biliary cirrhosis is more common in females and is usually associated with raised IgM levels. Xanthelasma are present due to cholestasis. Connective tissue disorders such as Sjogren's syndrome are associated. A positive antimitochondrial antibody and liver biopsy are best ways to confirm the diagnosis.



Xanthelasma



#### [ Q: 61 ] MRCPass - Gastroenterology

A 50 year old man presents with lower back pains and lethargy. Investigations subsequently confirmed obstructive nephropathy and retroperitoneal fibrosis. His medication is reviewed on the ward round.

*Which medication is well known to cause retroperitoneal fibrosis?*

- 1- Isoniazid
- 2- Rifampicin
- 3- Cyclosporin
- 4- Aspirin
- 5- Methysergide

#### Answer & Comments

**Answer:** 5- Methysergide

Retroperitoneal fibrosis is a disease featuring the proliferation of fibrous tissue in the retroperitoneum, the compartment of the body containing the kidneys, aorta, renal tract and various other structures. It may present with lower back pain, renal failure, hypertension, deep vein thrombosis and other obstructive symptoms.

It may have an autoimmune etiology. One-third of the cases are secondary to malignancy, medication (methysergide, hydralazine, beta blockers), aortic aneurysm or certain infections.

Methyldopa, methysergide, amphetamines, beta blockers, cocaine and LSD are drugs which cause retroperitoneal fibrosis. Azathioprine is used to treat the condition.



#### [ Q: 62 ] MRCPass - Gastroenterology

A 35 year old man has HIV infection. Recently his CD4 count has dropped to 250 from 600 and viral load has dropped from 10,000 copies to 2000 copies /ml. He has now developed diarrhoea.

*Which one of the following is likely to cause diarrhoea in a HIV positive patient?*

- 1- Staph aureus
- 2- Strep pyogenes
- 3- Cryptosporidium
- 4- Mycobacterium tuberculosis
- 5- Neisseria meningitidis

#### Answer & Comments

**Answer:** 3- Cryptosporidium

Common organisms such as entamoeba, salmonella, giardia, campylobacter, cryptosporidium, cyclospora, mycobacterium and also viral causes can cause diarrhoea in HIV positive patients.



## [ Q: 63 ] MRCPass - Gastroenterology

A 70 year old man is admitted with pruritus, lethargy and jaundice. He has not drunk any alcohol for five years.

One month ago, he completed a course of CoAmoxiclav which was prescribed by his GP. He also takes diclofenac for osteoarthritis.

Investigations reveal:

Albumin 37 g/L

Bilirubin 180 umol/L

AST 220 iu/L

Alkaline Phosphatase 210 iu/l

Abdominal ultrasound reveals gallstones without biliary duct dilatation.

*What is the likely cause of his jaundice?*

- 1- Hepatitis C infection
- 2- Diclofenac
- 3- Cholangiocarcinoma
- 4- Co-Amoxiclav
- 5- Alcoholic cirrhosis

## Answer &amp; Comments

Answer: 4- Co-Amoxiclav

Co amoxiclav (Augmentin) can cause hepatic/cholestatic drug induced jaundice. A 4 week delay in symptoms signs is not uncommon.



## [ Q: 64 ] MRCPass - Gastroenterology

A 50 year old alcoholic patient presents with upper GI bleeding. Urgent endoscopy confirms oesophageal varices.

*Which of the following can be used to prevent secondary variceal haemorrhage?*

- 1- Thyroxine
- 2- Cefotaxime
- 3- Frusemide
- 4- Terlipressin

5- Spironolactone

## Answer &amp; Comments

Answer: 4- Terlipressin

Octreotide and terlipressin are used to prevent secondary variceal bleeding. Octreotide is a somatostatin analogue.



## [ Q: 65 ] MRCPass - Gastroenterology

A 40 year old man presents with slurring of his speech and unsteadiness.

He has a coarse tremor in his hands and ataxic, shuffling gait on examination.

His blood tests show normal renal function.

AST is 250 (1-30) U/l, ALP is 350 (1-250) U/l and Bilirubin is 45 (1-22).

*Which is the best investigation to confirm a diagnosis?*

- 1- Hepatitis screen
- 2- Serum Cu and caeruloplasmin
- 3- MRI of brain
- 4- Serum ferritin
- 5- IT 15 gene test for Huntington's

## Answer &amp; Comments

Answer: 2- Serum Cu and caeruloplasmin

Wilson's disease can present with early Parkinsons, psychiatric symptoms and dysarthria. It also causes abnormal liver function. It is an autosomal recessive condition. Serum copper and caeruloplasmin are low. Urinary copper excretion is raised.



## [ Q: 66 ] MRCPass - Gastroenterology

A 30 year old Irish lady has a 15 year history of non-specific abdominal pains and diarrhoea. The symptoms are worse with certain foods. Her AXR is unremarkable.

*Which of the following tests is most likely to confirm the diagnosis?*



- 1- Amylase
- 2- Anti gliaden and anti endomysial antibodies
- 3- Smooth muscle antibodies
- 4- Ferritin
- 5- B12 levels

#### Answer & Comments

**Answer:** 2- Anti gliaden and anti endomysial antibodies

Celiac disease (gluten sensitive enteropathy) is relatively common in Ireland. The patient's history suggests gluten sensitivity. Gluten is found in wheat, rye and barley.



#### [ Q: 67 ] MRCPass - Gastroenterology

A 35 year old man has who has a history of heavy alcohol intake presents with hematemesis and melena. On admission, he was in a preshock state with severe anemia and was resuscitated with blood and fresh frozen plasma. Endoscopic examination identified bleeding from the varices in the second portion of the duodenum.

*Which one of the following drugs can be used for treatment?*

- 1- Octreotide
- 2- Vitamin C
- 3- Simvastatin
- 4- Carbimazole
- 5- Bromocriptine

#### Answer & Comments

**Answer:** 1- Octreotide

Somatostatin and its derivative, octreotide, are often used for emergency treatment of bleeding oesophageal varices in patients with cirrhosis of the liver. It is given intravenously.



#### [ Q: 68 ] MRCPass - Gastroenterology

A 50 year old man has returned from India recently and presents with diarrhoea.

*Which of the following is the commonest cause of traveller's diarrhoea?*

- 1- Giardia Lamblia
- 2- Yersinia enterocolitica
- 3- E. Coli
- 4- Shigella Flexneri
- 5- Entamoeba Histolytica

#### Answer & Comments

**Answer:** 3- E. Coli

E. Coli is the commonest cause of travellers diarrhoea. It is usually a self limiting condition.



#### [ Q: 69 ] MRCPass - Gastroenterology

A 60 year old man presents with a 4 month history of dysphagia and weight loss. A diagnosis of achalasia is made.

*Which of the following is the best way to provide symptomatic relief?*

- 1- Surgical cardiomyotomy
- 2- Propanolol
- 3- Isosorbide mononitrate
- 4- Gaviscon
- 5- Magnesium trisilicate

#### Answer & Comments

**Answer:** 1- Surgical cardiomyotomy

Cardiomyotomy entails surgical division of the lower oesophageal sphincter. Mortality rates of less than 1% and success rates of over 85% have been recorded. There is However a high incidence (up to 10%) of oesophageal reflux post-operatively progressing in a number of cases to peptic stricture. For achalasia, nitrates and hydralazine can help in short term.



## [ Q: 70 ] MRCPass - Gastroenterology

A 35 year old man presents with jaundice. He has been on a drug which was prescribed by his GP for several weeks. His blood tests show a bilirubin of  $34\mu\text{mol/l}$ , ALP of 450 U/l and AST 50 U/l.

*Which one of the following drugs is likely to cause cholestatic jaundice?*

- 1- Chlorpromazine
- 2- Paracetamol
- 3- Ibuprofen
- 4- Allopurinol
- 5- Colchicine

## Answer &amp; Comments

Answer: 1- Chlorpromazine

Chlorpromazine, tricyclic antidepressants, azathioprine, augmentin and erythromycin cause cholestatic jaundice and also associated hepatitis.



## [ Q: 71 ] MRCPass - Gastroenterology

A 40 year old woman has drunk 50 units a week of alcohol for 20 years.

During investigations, she has :

Haemoglobin 10.2 g/dL, MCV 110 fL (80-96), white cell count  $2.1 \times 10^9/\text{L}$  (4-11), platelet count  $75 \times 10^9/\text{L}$  (150-400).

*What might explain these results?*

- 1- Liver cirrhosis
- 2- Folic acid deficiency
- 3- Hepatitis C infection
- 4- Iron deficiency
- 5- Multiple myeloma

## Answer &amp; Comments

Answer: 2- Folic acid deficiency

The haematological picture is that of B12 or folate deficiency. Folate deficiency occurs in

the majority of binge-drinking alcoholics and is a common cause of anemia. Inadequate dietary intake, intestinal malabsorption, and impaired folate storage in the liver all contribute to folate deficiency.



## [ Q: 72 ] MRCPass - Gastroenterology

A 20 year old patient has recently returned from travelling in South Africa, and is unwell with diarrhoea. She had a 2-week history of profuse loose brown stools, lethargy, weakness, nausea and abdominal discomfort. The diarrhoea had initially settled with loperamide, but then recurred again.

A faecal specimen was collected for microscopy and culture, and it subsequently grew *Giardia lamblia*.

*What medication should be used for treatment?*

- 1- Amoxycillin
- 2- Albendazole
- 3- Metronidazole
- 4- Erythromycin
- 5- Gentamicin

## Answer &amp; Comments

Answer: 3- Metronidazole

*Giardia lamblia* infection can present with abdominal pains and diarrhoea or steatorrhoea. Metronidazole or tinidazole are first line treatments. It does not cause dysentery (cholera or amoebiasis do). Duodenal aspirate biopsy can confirm the diagnosis. Villous atrophy is associated.



## [ Q: 73 ] MRCPass - Gastroenterology

A 60 year old woman presents with a 12 month history of chest pain, dysphagia when consuming both solids and liquids. She smokes 15 cigarettes per day and drinks 12 units of alcohol per week. Clinical examination was normal.

*What is the likely diagnosis?*

- 1- Oesophagitis
- 2- Oesophageal web
- 3- Pharyngeal pouch
- 4- Achalasia
- 5- Oesophageal carcinoma

#### Answer & Comments

Answer: 4- Achalasia

A longstanding history of dysphagia with both solids & liquids suggests a functional rather than mechanical cause. Achalasia, in which there failure of oesophageal peristalsis and relaxation of lower oesophageal sphincter fits the clinical picture best.



[ Q: 74 ] MRCPass - Gastroenterology

A 55 year old man has a long history of alcohol use. On the average he drinks two bottles of wine a day. He presents with tremors, hallucinations and has signs of chronic liver disease as well as ascites. The senior house officer assesses the status of chronic liver disease with the Child Pugh Classification.

*Which of the following is one of the criteria used to assess severity?*

- 1- Haemoglobin
- 2- AST
- 3- Sodium
- 4- Creatinine
- 5- Prothrombin time

#### Answer & Comments

Answer: 5- Prothrombin time

Child Pugh classification includes bilirubin level, prothrombin time, encephalopathy scores, ascites and albumin. AST is not used to assess severity of liver disease.



[ Q: 75 ] MRCPass - Gastroenterology

A 50 year old man has 5 year history of bloody diarrhoea mixed with mucus. He had lost 2 stones in weight over this time. Flexible sigmoidoscopy showed loss of vascular appearance, erythema, and superficial ulceration consistent with ulcerative colitis.

*Which one of the following features is associated with the condition?*

- 1- Rheumatoid arthritis
- 2- Acromegaly
- 3- Osteomalacia
- 4- Megaloblastic anaemia
- 5- Episcleritis

#### Answer & Comments

Answer: 5- Episcleritis

Megaloblastic anaemia occurs in Crohn's as B12 is absorbed in the ileum.

Ulcerative colitis is also associated with:

aphthous ulcers of the mouth

Iritis/Uveitis and episcleritis

seronegative arthritis, ankylosing spondylitis, sacroilitis

erythema nodosum, pyoderma gangrenosum

Primary sclerosing cholangitis, cholangiocarcinoma



Episcleritis



## [ Q: 76 ] MRCPass - Gastroenterology

A 60 year old man is admitted as an emergency with severe abdominal pain. He smokes 30 cigarettes a day and takes approximately 30 units of alcohol per week but admits to exceeding this amount occasionally. He also complains of sudden onset poor vision. Ophthalmoscopy shows multiple micro infarcts (cotton wool spots).

*What investigation should be considered next?*

- 1- Carotid dopplers
- 2- CT scan abdomen
- 3- E.R.C.P.
- 4- Upper GI endoscopy
- 5- Colonoscopy

## Answer &amp; Comments

Answer: 2- CT scan abdomen

Ischaemic retinopathy, which causes retinal oedema and micro infarcts, is a complication of acute pancreatitis. CT scan of the abdomen will be useful in confirming diagnosis and assessing for the presence of a pancreatic abscess/pseudocyst.



## [ Q: 77 ] MRCPass - Gastroenterology

A 43 year male presents with weight loss and watery diarrhoea for several weeks. Investigations reveal hypokalaemia.

*Which of the following would support a diagnosis of a VIPoma?*

- 1- Hypoglycaemia
- 2- Raised Insulin levels
- 3- Pellagra
- 4- Achlorhydria
- 5- Erythema nodosum

## Answer &amp; Comments

Answer: 4- Achlorhydria

VIPomas in adults are usually neuroendocrine islet cell tumors of the pancreas that produce high amounts of VIP. Other secreted hormones may include secreted gastrin and pancreatic polypeptide.

Achlorhydria (lack of acidity from the stomach) is classically associated with VIPoma. It can be diagnosed by measuring acid output from nasogastric contents (NG tube). Features of VIP syndrome include watery diarrhea, hypochlorhydria, hyperglycemia, hypercalcemia and flushing. Migratory erythema associated with glucagonoma.



## [ Q: 78 ] MRCPass - Gastroenterology

A 45 year old woman presents with jaundice and several weeks before had pruritus all over her body. Her only past medical history is Hashimoto's thyroiditis. On examination, she has jaundice, xanthelasmata and hepatomegaly.

*Which of the following is the most likely cause of the jaundice?*

- 1- Cholecystitis
- 2- Primary biliary cirrhosis
- 3- Systemic lupus erythematosus
- 4- Hepatitis C
- 5- Cholangiocarcinoma

## Answer &amp; Comments

Answer: 2- Primary biliary cirrhosis

Primary biliary cirrhosis commonly affects women at the age of 45-60. Pruritus often precedes jaundice.

Hashimoto's thyroiditis as well as other autoimmune conditions are associated. Xanthelasmata are often present in patients with primary biliary cirrhosis.



## [ Q: 79 ] MRCPass - Gastroenterology

A 35 year old woman has abdominal pain, jaundice and worsening ascites. She drinks 20 units of alcohol each week, and takes the oral contraceptive pill.

*Which of the following findings would make a diagnosis of Budd Chiari syndrome likely?*

- 1- Encephalopathy
- 2- Tender hepatomegaly
- 3- Ascites fluid protein of 42 g/L
- 4- Alanine aminotransferase of 150 U/L
- 5- Ankle oedema

## Answer &amp; Comments

Answer: 2- Tender hepatomegaly

Budd-Chiari syndrome is an uncommon condition induced by thrombotic or nonthrombotic obstruction to hepatic venous outflow. The classic triad of abdominal pain, ascites, and hepatomegaly is observed in the vast majority of patients but is nonspecific. Tender hepatomegaly on examination is one of the hallmark signs.



## [ Q: 80 ] MRCPass - Gastroenterology

A 50 year old lady complains of epigastric burning pains due to stress. She finally undergoes an OGD which shows gastro-oesophageal reflux.

*Which medication is the most effective for her condition?*

- 1- Nizatidine
- 2- Bismuth
- 3- Gaviscon
- 4- Magnesium trisilicate
- 5- Pantoprazole

## Answer &amp; Comments

Answer: 5- Pantoprazole

Proton pump inhibitors such as omeprazole, lansoprazole and pantoprazole are more effective than H2 receptor blockers such as ranitidine, cimetidine or nizatidine. Healing in oesophagitis is better with a PPI although all of the options can reduce symptoms due to acid reflux.



## [ Q: 81 ] MRCPass - Gastroenterology

A 65 year old man presents with dysphagia of solids for the past three months. There is a history of 10 kg weight loss in 4 months following loss of appetite. He has had symptoms of indigestion and heartburn for 10 years. He regularly takes Gaviscon and milk of magnesia. He is a heavy smoker. He undergoes endoscopy, which reveals a small tumour at the lower part of the oesophagus.

*What is the likely aetiological cause?*

- 1- Barrett's oesophagus
- 2- Helicobacter pylori
- 3- Oesophageal pouch
- 4- Family history
- 5- Colonic carcinoma metastases

## Answer &amp; Comments

Answer: 1- Barrett's oesophagus

The history is suggestive of gastro oesophageal reflux past 10 years. There may be dysplasia of the oesophageal mucosa known as Barrett's oesophagus. In Barrett's oesophagus the stratified squamous epithelium that normally lines the distal oesophagus is replaced by an abnormal columnar epithelium that has intestinal features.

Modern data indicate that patients with Barrett's oesophagus develop oesophageal adenocarcinomas at the rate of 0.5% per year, a rate that is more than 30-fold higher than that of the general population.



## [ Q: 82 ] MRCPass - Gastroenterology

A 60 year old man has been referred by his GP for investigation of hepatomegaly. His past medical history includes type II diabetes and longstanding arthralgia.

Investigations show :

Albumin 28 g/L

Total bilirubin 45 umol/L

Alkaline Phosphatase 170 U/L

ALT 180 U/L

gamma glutamyl transferase 160 U/L

Ferritin 1200 microg/L (15-400)

*What is the diagnosis?*

- 1- Primary biliary cirrhosis
- 2- Non alcoholic steatohepatitis
- 3- Diabetes mellitus
- 4- Wilson's disease
- 5- Haemochromatosis

## Answer &amp; Comments

Answer: 5- Haemochromatosis

The diagnosis of haemochromatosis is based on clinical features of the disease; these features include diffuse hyperpigmentation, non migratory polyarthrititis, chondrocalcinosis, hepatomegaly, and diabetes mellitus. There is also deranged liver function tests and significantly high ferritin in this case, pointing towards the diagnosis.



## [ Q: 83 ] MRCPass - Gastroenterology

A 45 year old man presents with haematemesis and melaena. He gives a history of drinking 20 units of alcohol a day for more than 15 years. On examination he has spider naevi, Dupuytren's contracture, jaundice and ascites.

*Whilst awaiting endoscopy the initial management of this patient should be:*

- 1- Propanolol
- 2- Nasogastric tube
- 3- Intravenous pantoprazole
- 4- Terlipressin
- 5- Lactulose

## Answer &amp; Comments

Answer: 4- Terlipressin

The patient has clinical evidence of cirrhosis of the liver and likely oesophageal varices.

Octreotide and terlipressin are widely used in acute variceal hemorrhage to reduce the bleeding rate. They act by causing mesenteric arterial vasoconstriction, thus reducing portal venous flow and portal pressure.



## [ Q: 84 ] MRCPass - Gastroenterology

A 60 year man presents with malaise, weight loss, diarrhoea and pain in the joints. He is pigmented, has clubbing and lymphadenopathy. He has ascites and ophthalmoplegia. Investigations show that he is anaemic. ECG shows a right bundle branch block and paracentesis abdominis reveals chylous ascites.

*What is the likely diagnosis?*

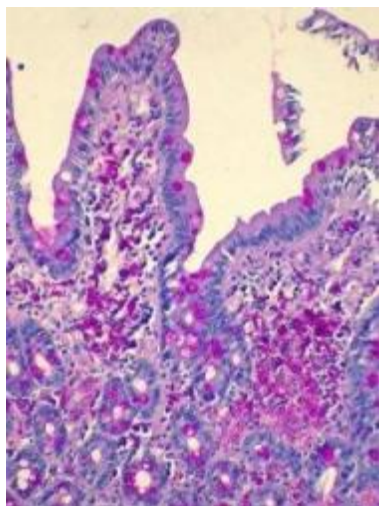
- 1- Wilson's disease
- 2- Tropical sprue
- 3- Whipple's disease
- 4- Coeliac disease
- 5- Crohn's disease

## Answer &amp; Comments

Answer: 3- Whipple's disease

The diagnosis is Whipple's disease. Histology of small bowel biopsy will show multiple macrophages in the lamina propria and the presence of rod shaped bacteria (Tropheryma Whippelli) both within and outside the abnormal macrophages.





PAS stained macrophages in duodenal biopsy  
(purple)



[ Q: 85 ] MRCPass - Gastroenterology

A 30 year old man presents with longstanding epigastric pains. An abdominal CT was organised and this showed dilated pancreatic ducts.

The secretin test is positive.

The patient has a HB of 13 g/dl, MCV of 105 fl and platelet count of  $350 \times 10^9/l$ .

*The high MCV is most likely due to:*

- 1- Folic acid deficiency
- 2- B12 deficiency
- 3- Myelodysplastic syndrome
- 4- Reticulocytosis
- 5- Paroxysmal nocturnal haemoglobinuria

Answer & Comments

Answer: 2- B12 deficiency

In chronic pancreatitis, trypsin secretion is reduced. Trypsin is required in the processing of dietary B12 which enables absorption and hence B12 deficiency is the most likely in this case.



[ Q: 86 ] MRCPass - Gastroenterology

A 40 year old heavy alcoholic

presents unwell with difficulty walking and confusion.

On examination, he has signs of chronic liver disease, hepatomegaly and ascitis.

Blood tests confirm deranged liver function including AST and GGT.

*Which one of the following is the most important manifestation of acute hepatic failure?*

- 1- Prolonged prothrombin time
- 2- Hepatic encephalopathy
- 3- Elevated ALT and AST
- 4- Jaundice
- 5- Ascites

Answer & Comments

Answer: 2- Hepatic encephalopathy

Hepatic encephalopathy is the cardinal manifestation of acute hepatic failure.

It is characterized by various neurologic symptoms including changes in reflexes, changes in consciousness, and behavior changes that can range from mild to severe.

The exact cause is unknown, but one substance believed to be particularly toxic to the central nervous system is ammonia which is normally detoxified by the liver.



[ Q: 87 ] MRCPass - Gastroenterology

A 20 year girl is commenced on nasogastric feeding due severe anorexia nervosa. She becomes acutely confused after a week.

*Which one of the following investigations should be requested?*

- 1- Troponins
- 2- Serum Calcium
- 3- Serum Bicarbonate
- 4- Serum Magnesium

## 5- Serum Potassium

## Answer &amp; Comments

Answer: 4- Serum Magnesium

Refeeding syndrome of hypophosphataemia, hypomagnesaemia, hypocalcaemia and fluid retention is seen in severely malnourished patients when they are started on enteral or parenteral nutrition. In particular, hypomagnesaemia can cause cardiac rhythm problems and confusion.



## [ Q: 88 ] MRCPass - Gastroenterology

A 45 year old man presents with epigastric pain and vomiting. He had pain located at the upper abdomen for the last 8 hours prior to admission. The patient also complained of nausea and two episodes of vomiting. He has an amylase of 500 (60-180) U/l. Ultrasound of the abdomen showed a pancreas with enhanced echogenicity.

*Which of the following is a poor prognostic indicator?*

- 1- White cell count of  $10 \times 10^9/L$
- 2- Urea of 7 mmol/l
- 3- Glucose of 8 mmol/l
- 4- ALT of 350 U/l
- 5- Calcium of 2.8 mmol/l

## Answer &amp; Comments

Answer: 4- ALT of 350 U/l

Poor prognostic indicators in acute pancreatitis can be assessed with the Ranson Criteria or APACHE scores.

Ranson's criteria:

At admission

- \* age in years > 55 years
- \* white blood cell count > 16000 cells/mm<sup>3</sup>
- \* blood glucose > 10 mmol/L (> 200 mg/dL)

- \* serum AST > 250 IU/L

- \* serum LDH > 350 IU/L

At 48 hours

- \* Calcium (serum calcium < 2.0 mmol/L (< 8.0 mg/dL)

- \* Hematocrit fall > 10%

- \* Oxygen (hypoxemia PO<sub>2</sub> < 60 mmHg)

- \* Urea increased by 1.8 or more mmol/L (5 or more mg/dL) after IV fluid hydration

- \* Base deficit (negative base excess) > 4 mEq/L

- \* Sequestration of fluids > 6 L



## [ Q: 89 ] MRCPass - Gastroenterology

A 55 year old chronic alcoholic is found on the street with a low conscious level. His GCS is 3/15 on arrival in casualty. On examination, his BP is 110/65 and he is jaundiced. There is marked ascites and he has 7 spider naevi.

ECG shows atrial fibrillation with a ventricular rate of 120.

*Which is the most practical test to elucidate why he is unconscious?*

- 1- EEG
- 2- Ultrasound of abdomen
- 3- BM stick
- 4- Phenytoin and carbamazepine levels
- 5- Paracetamol and salicylate levels

## Answer &amp; Comments

Answer: 3- BM stick

In a patient with liver disease, it is important to exclude hypoglycaemia as a cause of unconsciousness. Following confirming that baseline observations and BM is normal, the next best step is to perform a CT of his head to



exclude a central neurological cause of decreased conscious level.



[ Q: 90 ] MRCPass - Gastroenterology

A 28 year old woman has symptoms of lethargy, bloody diarrhoea and a previous history of DVT in the leg. On examination, the left eye was inflamed and multiple mouth ulcers were noted. Colonoscopy was organised and this confirmed colitis. She also has vulval ulcers.

*What is the likely diagnosis?*

- 1- Homocystinuria
- 2- Erythema nodosum
- 3- Ulcerative colitis
- 4- Behcet's disease
- 5- Crohn's disease

Answer & Comments

Answer: 4- Behcet's disease

Recurrent oral ulceration is the commonest manifestation and the presenting feature in Behcet's disease. The commonest second systems involved are the genital mucosae and eyes. Vasculitis, pustules and subcutaneous nodules also occur. Vascular thrombosis occurs in about 10% of patients.



[ Q: 91 ] MRCPass - Gastroenterology

A 65 year man presents with a 6 day history of lower abdominal pains and diarrhoea. He has had several courses of antibiotics for recurrent chest infections over the past month. On examination he has a temperature of 38.2°C, a blood pressure of 100/70 mmHg and a distended, tender abdomen.

*Which of the following is the most appropriate investigation?*

- 1- Plain abdominal and erect chest X ray

- 2- Flexible sigmoidoscopy
- 3- Stool PCR
- 4- Sputum culture
- 5- Ultrasound scan of abdomen

Answer & Comments

Answer: 1- Plain abdominal and erect chest X ray

The diagnosis is pseudomembranous colitis due Clostridium Difficile infection. The patient was predisposed due to antibiotic usage. Plain AXR is useful in diagnosing toxic dilatation and erect CXR would exclude gas under the diaphragm. Stool testing for Clostridial toxin (CDT) would also be useful.



[ Q: 92 ] MRCPass - Gastroenterology

A 27 year old lady is referred for investigation of abnormal liver function tests. She has been taking several drugs to treat tuberculosis for a long period of time.

Her albumin is 30 g/l, bilirubin 15 µmol/l, ALP is 250 U/l and ALT is 300 U/l.

She has a liver biopsy which shows histological evidence of liver necrosis eroding the portal zone and extending into the liver lobule.

*What is the likely diagnosis?*

- 1- Hepatitis B infection
- 2- Hepatitis C infection
- 3- Primary biliary cirrhosis
- 4- Chronic active hepatitis
- 5- Autoimmune hepatitis

Answer & Comments

Answer: 4- Chronic active hepatitis

Inflammatory conditions (e.g Wilson's disease) and drugs such as methyldopa and isoniazid can precipitate chronic active hepatitis.

Autoimmune hepatitis is associated with anti-nuclear antibodies (70%), anti smooth muscle

(30%) and liver specific antibodies (ASGP-R asialoglycoprotein receptor; LKM liver kidney microsomal antibodies).



[ Q: 93 ] MRCPass - Gastroenterology

A 60 year old woman has recently been treated with amoxycillin for a tooth abscess. Since then, she has developed diarrhoea for up to 15 times a day. There is blood in the stools.

Her Hb is 13 g/dl, WCC  $13 \times 10^9/l$ , platelets  $500 \times 10^9/L$ . Her CRP is 80 mg/l.

*What is the likely infective organism?*

- 1- Clostridium difficile
- 2- Cyclospora
- 3- Cryptosporidium
- 4- Clostridium tetani
- 5- Campylobacter

Answer & Comments

Answer: 1- Clostridium difficile

In a patient who has recently had antibiotics, Clostridium difficile is the most likely infective organism.

Discontinuation of the offending antibiotic is important (not always easy if an infection such as a dental abscess persists). Metronidazole and vancomycin given orally are equally effective.



[ Q: 94 ] MRCPass - Gastroenterology

A 48 year old man with Child's grade C cirrhosis presents with haematemesis.

*Which one of the following drugs, administered immediately intravenously, would be appropriate?*

- 1- Propranolol
- 2- Sodium Nitroprusside
- 3- Isosorbide dinitrate
- 4- Pabrinex

5- Somatostatin

Answer & Comments

Answer: 5- Somatostatin

This patient has high grade liver cirrhosis according to Childs Pugh classification.

Somatostatin acts to reduce portal pressures and is as effective as endoscopic procedures at controlling variceal bleeding in the acute setting. Betablockers can be used as oral prophylaxis oesophageal varices. IV omeprazole can also be given.



[ Q: 95 ] MRCPass - Gastroenterology

A 70 year old man presents with a six month history of diarrhoea and pale stools. He has lost 1 stone in weight over the past 6 months.

Investigations show :

Calcium 1.7 mmol/l

Phosphate 0.75 (0.8-8) pmol/l

Alkaline phosphatase 360 U/L (45-105)

*What is the likely diagnosis?*

- 1- Amoebiasis
- 2- Pancreatic carcinoma
- 3- Whipple's disease
- 4- Crohn's disease
- 5- Small Intestinal bacterial overgrowth

Answer & Comments

Answer: 2- Pancreatic carcinoma

Pancreatic carcinoma is the most probable diagnosis in view of his presenting symptoms and age. The patient has osteomalacia associated with malabsorption. Increased alkaline phosphatase would not be expected in Crohn's disease, Whipple's or bacterial overgrowth.



## [ Q: 96 ] MRCPass - Gastroenterology

An 18 year old arts student presents with haematemesis. He has been out drinking with his friends and drank about 15 pints of beer. He vomited several times. The last time he vomited he brought up several cupfuls of blood.

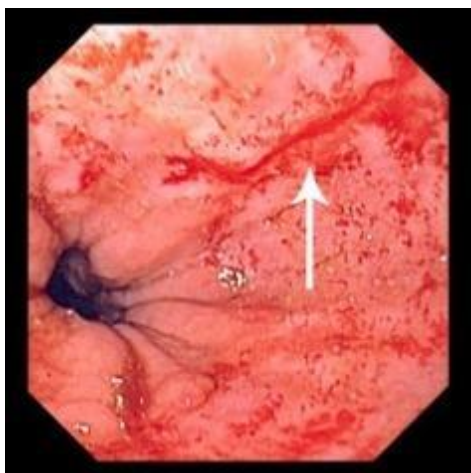
*What is the most likely cause of his haematemesis?*

- 1- Mallory-Weiss tear
- 2- Hyponatraemia
- 3- Oesophageal varices
- 4- Gastritis
- 5- Peptic ulcer

## Answer &amp; Comments

Answer: 1- Mallory-Weiss tear

A Mallory-Weiss tear occurs at the gastro-oesophageal junction when there is a sudden increase in intra-abdominal pressure, especially with recurrent vomiting.



## [ Q: 97 ] MRCPass - Gastroenterology

A 40 year old man has worsening jaundice and has deranged liver function tests which have worsened over the last 3 months. He has positive IgG to hepatitis C.

*Which of the following investigations is most useful for management of the condition?*

- 1- CT scan of abdomen
- 2- ERCP
- 3- Antimitochondrial antibody
- 4- HCV DNA levels
- 5- Liver biopsy

## Answer &amp; Comments

Answer: 5- Liver biopsy

Liver biopsy is useful to determine the severity of the disease and for monitoring progression when treatment with ribavirin and interferon is instigated. Cirrhosis develops in 20-25 percent of patients with chronic hepatitis C after 10 years.



## [ Q: 98 ] MRCPass - Gastroenterology

A 30 year old woman presents in the second trimester of her first pregnancy with jaundice. There are no other symptoms, and her urine is not discoloured.

Blood tests show ALT 32 (5-35) U/l, AST 28 (1-31) U/l, ALP 75 (20-120) U/l, GGT 31 (4-35) U/l, Bilirubin 65 (1-22)  $\mu$ mol/l, Albumin 37 (37-49) g/l.

*The likely diagnosis is:*

- 1- Dubin Johnson syndrome
- 2- Cholestasis of pregnancy
- 3- Gilbert's syndrome
- 4- Alcoholic liver cirrhosis
- 5- Primary biliary cirrhosis

## Answer &amp; Comments

Answer: 3- Gilbert's syndrome

This is unlikely to be intrahepatic cholestasis of pregnancy because there is no elevation of alkaline phosphatase and ALT/AST. The condition is usually associated with intense pruritus as well.

The isolated raised bilirubin makes a diagnosis of Gilbert's syndrome likely.

Gilbert's syndrome is an autosomal recessive condition characterized by intermittent jaundice in the absence of hemolysis or underlying liver disease. Unconjugated hyperbilirubinemia in Gilbert syndrome has long been recognized as due to underactivity of the conjugating enzyme system bilirubin-uridine diphosphate glucuronyl transferase (bilirubin-UGT).

Jaundice in Gilbert syndrome may be precipitated by dehydration, fasting, menstrual periods, pregnancy, stress, such as an intercurrent illness or vigorous exercise.

Dubin-Johnson syndrome is asymptomatic mild jaundice due to impaired excretion of bilirubin. In contrast to Gilbert's syndrome, the hyperbilirubinemia is conjugated and bile appears in the urine.



[ Q: 99 ] MRCPass - Gastroenterology

A 20 year old man is well but jaundiced. His urine colour is normal. His liver function tests show bilirubin 45  $\mu\text{mol/l}$ , ALT 26 U/l, AST 25 U/l, GGT 40 U/l and ALP 80 U/l.

Ultrasound scan of abdomen shows normal parenchymal texture of the liver.

*Which diagnosis is most likely?*

- 1- Dubin Johnson syndrome
- 2- Crigler Najjar syndrome
- 3- Gilbert's syndrome
- 4- Infectious mononucleosis
- 5- Haemochromatosis

#### Answer & Comments

Answer: 3- Gilbert's syndrome

Unconjugated hyperbilirubinemia in Gilbert syndrome is due to underactivity of the conjugating enzyme system bilirubin-uridine diphosphate glucuronyl transferase (bilirubin-UGT) which converts bilirubin to a conjugated, water soluble form.

Crigler Najjar is a more severe form in which the same enzyme is absent and there is neonatal jaundice due to very high levels of unconjugated hyperbilirubinaemia. In contrast, Dubin Johnson syndrome leads to high levels of conjugated bilirubin which will lead to dark urine.



[ Q: 100 ] MRCPass - Gastroenterology

A 40 year old woman with epigastric pain undergoes upper GI endoscopy. A biopsy was taken and it revealed a diagnosis of mucosal associated lymphoid tissue.

*What should be done initially?*

- 1- Bilioth's operation
- 2- Proton pump inhibitor
- 3- H pylori eradication
- 4- Radiotherapy
- 5- Chemotherapy

#### Answer & Comments

Answer: 3- H pylori eradication

MALT lymphoma (or MALToma) is a relatively rare form of non-Hodgkin's lymphoma.

70% of cases of MALT lymphoma affecting the stomach are H pylori positive. Eradication of H pylori is recommended. Chemotherapy (chlorambucil), surgery and radiotherapy can then be considered.



[ Q: 101 ] MRCPass - Gastroenterology

A 38 year old lady who is asymptomatic has an ultrasound of her abdomen done privately. It showed several gallstones and no biliary duct dilatation. She has no other past medical history.

*What should be done?*

- 1- Open cholecystectomy
- 2- Laparoscopic cholecystectomy

- 3- ERCP
- 4- Lithotripsy
- 5- Observation

#### Answer & Comments

Answer: 5- Observation

The natural history of asymptomatic gallstones (GS) suggests that a large number of affected individuals will remain asymptomatic throughout life; only 1-4% per year will develop symptoms or complications of GS disease. Therefore, the natural history of asymptomatic GSs is so benign that surgery is generally not recommended and watchful waiting is the best course of management. Laparoscopic cholecystectomy is recommended for asymptomatic patients with risks factors such as sickle cell disease and diabetes.



[ Q: 102 ] MRCPass -  
Gastroenterology

A 23 year old man has recently travelled back from the Middle East. He has previously been well and there is no past medical history. He has a 5 day history of bloody diarrhoea and has acute abdominal pains.

On examination, he has a temperature of 38°C and a tender lower abdomen.

*What is the likely causative organism?*

- 1- Cryptosporidium
- 2- Shigellosis
- 3- E coli
- 4- Giardiasis
- 5- Cholera

#### Answer & Comments

Answer: 2- Shigellosis

Bloody diarrhoea is more likely to be caused by shigella.

Cholera and giardial diarrhoea are not typically bloody. There is no history of immunocompromise to suggest cryptosporidia infection.

Shigellosis is spread by means of fecal-oral transmission. Other modes of transmission include ingestion of contaminated food or water, contact with a contaminated inanimate object, and sexual contact. Sudden onset of severe abdominal cramping, high-grade fever, emesis, anorexia, and large-volume watery diarrhea are presenting features. Seizures, delirium and haemolytic uraemic syndrome are complications.

Cotrimoxazole and ampicillin are recommended treatments.



[ Q: 103 ] MRCPass -  
Gastroenterology

A 45 year woman is admitted a single episode of haematemesis after taking a tablet of ibuprofen 6 hours previously.

On examination, she had a blood pressure of 120/75 mmHg (lying) and 95/60 mmHg (standing). Her haemoglobin concentration is 7.5 g/dL.

*What is the likely cause of the haemetemesis?*

- 1- Duodenal ulcer
- 2- Oesophagitis
- 3- Mallory Weiss Tear
- 4- Gastric erosions
- 5- Gastric ulcer

#### Answer & Comments

Answer: 4- Gastric erosions

The likely answer is gastric erosions because the bleeding occurred after only one dose of ibuprofen. There is no previous history of dyspepsia or upper GI bleeding. Nonsteroidal anti-inflammatory drugs (NSAIDs), such as aspirin, ibuprofen, and naproxen, can be direct irritants and cause gastritis/erosions.



Because of gravity, the irritants lie on the greater curvature of the stomach, and therefore, gastritis and ulcers are seen distally on or near the greater curvature of the stomach.



[ Q: 104 ] MRCPass -  
Gastroenterology

A 60 year old man presents with a 2-year history of arthritis, fever, recurrent cough and chest pain. He has been feeling very lethargic. Recently he has developed diarrhoea (steatorrhoea), abdominal pain and weight loss.

On examination he is pigmented, there is finger clubbing and lymphadenopathy. On auscultation, a pan-systolic murmur is heard in the cardiac apex.

*Which of the following investigations would confirm the clinical diagnosis?*

- 1- Serum autoimmune screen
- 2- Abdominal X ray
- 3- Small bowel biopsy
- 4- Iron studies
- 5- Amylase

#### Answer & Comments

Answer: 3- Small bowel biopsy

The patient has Whipple's disease, which may be confirmed by small bowel biopsy. This will show large, foamy PAS positive macrophages in the lamina propria. Whipple's disease affects mainly men aged 30 to 60. It is caused by an infection with *Tropheryma whippelii*.

Symptoms of Whipple's disease include diarrhoea, inflamed and painful joints, fever, and skin darkening. Severe malabsorption results in weight loss along with fatigue and weakness caused by anaemia. Antibiotics such as tetracycline, co-trimoxazole and penicillin can be used for treatment (6-12 months).



[ Q: 105 ] MRCPass -  
Gastroenterology

A 60 year old man has haematemesis and melaena. Examination reveals jaundice, confusion and a flapping tremor and ascites. He has a pulse rate of 110 bpm and blood pressure of 95/65 mmHg. An urgent endoscopy reveals small oesophageal varices, without evidence of bleeding but an oozing portal hypertensive gastropathy.

*Which of the following measures would be appropriate treatment?*

- 1- Endoscopic adrenaline injection
- 2- Intravenous vitamin K
- 3- Endoscopic banding
- 4- Oral propranolol
- 5- Endoscopic ethanolamine injection

#### Answer & Comments

Answer: 1- Endoscopic adrenaline injection

The endoscopy shows small varices with no evidence of bleeding but there is diffuse oozing of blood. Adrenaline injection (peri and intralesional injection of 1:10,000 adrenaline solution) will help to control the bleeding. Correction of any coagulopathy with vitamin K in this case will also be helpful.



[ Q: 106 ] MRCPass -  
Gastroenterology

A 65 year old man is admitted with a history of sudden onset abdominal pain, followed by watery diarrhoea and subsequent profuse rectal bleeding. He has been a smoker for 40 years and had a myocardial infarction 5 years

ago. He has a family history of colon carcinoma.

*What is the likely diagnosis?*

- 1- Sigmoid volvulus
- 2- Large bowel infarction
- 3- Rectal carcinoma
- 4- Ulcerative colitis
- 5- Crohn's disease

#### Answer & Comments

**Answer:** 2- Large bowel infarction

The history of pain, diarrhoea and bleeding per rectum in a patient with vascular risk factors suggests large bowel infarction. Ischaemic bowel disease may be acute or chronic. Most cases result from arterial occlusion, usually of the superior mesenteric artery. The small bowel is not commonly involved.



[ Q: 107 ] MRCPass - Gastroenterology

A 60 year woman with a long history of alcohol abuse has been on Phenytoin for epilepsy. On examination, she has a palpable liver edge.

Her full blood count reveals:

Haemoglobin 11.0 g/dL

MCV 116 fL

white cell count  $2.3 \times 10^9/L$

platelet count  $95 \times 10^9/L$

*What is the likely explanation for these results?*

- 1- Aplastic anaemia
- 2- Vitamin C deficiency
- 3- Myeloma
- 4- Iron deficiency
- 5- Folate deficiency

#### Answer & Comments

**Answer:** 5- Folate deficiency

The patient has heavy alcohol intake and phenytoin, hence is high risk for folate deficiency causing the macrocytic anaemia.



[ Q: 108 ] MRCPass - Gastroenterology

A GP refers a 35 year old lady for recurrent episodes of flushing. Over the past 10 years she had these symptoms. She describes each episode as starting with a freckled rash on her thorax and limbs, pounding in her heart, followed later by weakness, vomiting and diarrhoea.

The patient had no other remarkable medical history. She specifically denied having pathologic fractures or peptic ulcer disease. She was not taking prescription or nonprescription medication; she had no known allergies to medication or food.

Physical examination revealed a lady with hundreds of reddish-brown macules on his arms, legs, and chest. The macules extended onto the non-sun-exposed areas of her inner forearms and urticated when stroked (positive Darier sign).

Blood tests reveal eosinophilia, serum tryptase, 43.3 ng/mL (reference range, <11.5 ng/mL); serum histamine, 1.2 ng/mL (reference range, <1.0 ng/mL).

*Which of the following is the likely diagnosis?*

- 1- Acromegaly
- 2- Systemic mastocytosis
- 3- Hypothyroidism
- 4- Cushing's disease
- 5- Asthma

#### Answer & Comments

**Answer:** 2- Systemic mastocytosis



Systemic mastocytosis is caused by mast cell release of histamine in the skin or connective tissue. It classically presents with episodes of flushing, vomiting, diarrhoea and abdominal pain.

Diagnosis can be confirmed by raised levels of urinary N-methyl imidazole, blood eosinophilia and thrombocytopenia. Total serum tryptase levels of 20 ng/mL or higher in a baseline serum sample is also suggestive of systemic mast cell disease.

When a cutaneous lesion is stroked, it typically urticates, becoming pruritic, edematous, and erythematous. This change is referred to as the Darier sign, which is explained by mast cell degranulation induced by physical stimulation.



[ Q: 109 ] MRCPass -  
Gastroenterology

A 44 year old man presents with frequent diarrhoea and upper abdominal pains. He has had a partial gastrectomy 3 years ago for upper GI bleeding. He is now on high dose omeprazole regularly. A repeat endoscopy now shows two oesophageal ulcers.

*What is the appropriate investigation?*

- 1- Barium enema
- 2- Insulin tolerance test
- 3- H. pylori serology
- 4- Colonoscopy
- 5- Gastrin levels

#### Answer & Comments

Answer: 5- Gastrin levels

Diarrhea and recurrent gastric ulceration is common with Zollinger Ellison syndrome (gastrinoma). There would be demonstrable high fasting plasma gastrin levels. Gastrinomas may occur as part of a multiple endocrine neoplasia syndrome type 1.



[ Q: 110 ] MRCPass -  
Gastroenterology

A 48 year old man presents with lethargy and pruritus. He has lost one stone in weight over the past two years.

He does not smoke. There is no family history of bowel malignancy.

On examination he looks pale but is not jaundiced. There is no hepatomegaly and there are no signs of chronic liver disease. Liver ultrasound shows small gallstones. The gallbladder is not inflamed. There is no biliary duct dilatation. Bilirubin is 18, ALT is 180 U/L, ALP is 800 U/L. ANA and AMA are negative but pANCA is positive.

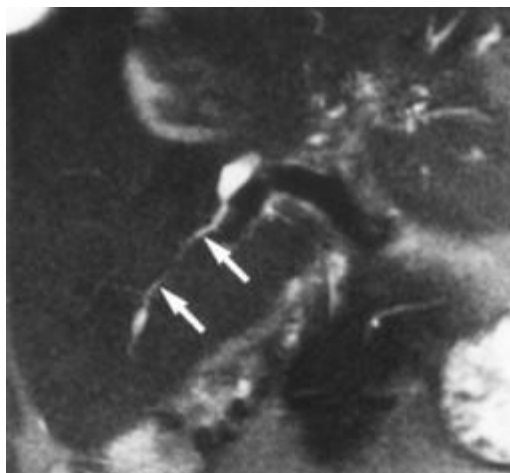
*What is the diagnosis?*

- 1- Primary biliary cirrhosis
- 2- Cholangiocarcinoma
- 3- Primary sclerosing cholangitis
- 4- Wilson's disease
- 5- Gallstones

#### Answer & Comments

Answer: 3- Primary sclerosing cholangitis

Primary sclerosing cholangitis presents at this age, there is cholestatic picture on the liver function tests, but not necessarily high bilirubin. pANCA is positive in about 90% of patients with PSC. A small proportion of patients (3%) will progress to cholangiocarcinoma at a later age.



MR cholangiogram showing stenoses and irregularities of the hepatic ducts and bile ducts in Sclerosing Cholangitis



[ Q: 111 ] MRCPass -  
Gastroenterology

A 22 year old man presents with a 10 month history weight loss, oral ulceration and diarrhoea. A flexible sigmoidoscopy is performed and a colonic biopsy was taken.

*Which of the following histological features would favour a diagnosis of Crohn's disease over ulcerative colitis?*

- 1- Lymphocyte infiltrate of lamina propria
- 2- Metaplastic polyps
- 3- Caseating granulomata
- 4- Crypt of lieberkuhn abscesses
- 5- Goblet cell mucus depletion

#### Answer & Comments

**Answer:** 1- Lymphocyte infiltrate of lamina propria

Crohn's disease is characterised by transmural inflammation, neutrophil infiltrates, lymphoid aggregates, fissures, preservation of crypt architecture and noncaseating granulomata.

Ulcerative colitis is typified by mucosal inflammation, general inflammatory cell infiltration, goblet cell mucus depletion and crypt abscesses.



[ Q: 112 ] MRCPass -  
Gastroenterology

A 65 year old woman complains of fevers, weight loss, joint pains and diarrhoea. A jejunal biopsy reveals flattened mucosa containing periodic acid-Schiff (PAS) positive macrophages.

*What is the most likely diagnosis?*

- 1- Coeliac disease
- 2- Campylobacter infection
- 3- Tropical sprue
- 4- Whipple's disease
- 5- Giardiasis

#### Answer & Comments

**Answer:** 4- Whipple's disease

PAS stained macrophages on the jejunal biopsy indicates a diagnosis of Whipple's disease.



[ Q: 113 ] MRCPass -  
Gastroenterology

A 40 year man with chronic hepatitis C has nonspecific general deterioration.

On examination he has a temperature of 37.8 C, pressure of 100/70 mmHg and is jaundiced.

His investigations reveal:

Serum Sodium 129 mmol/l

Serum potassium 4.2 mmol/l

Serum Urea 20 mmol/l

Serum Creatinine 350 micromol/l

bilirubin 65 micromol/l

AST 92 (10-40) U/l

Alk Phosphatase 250 (50-120) U/l

Albumin 30 (33-42) g/l

Urine sodium 15 mmol/l

*What is the likely diagnosis?*

- 1- Hepatitis B infection

- 2- Spontaneous bacterial peritonitis
- 3- Hepatorenal syndrome
- 4- Hepatocellular carcinoma
- 5- Discreet alcoholism

#### Answer & Comments

**Answer:** 3- Hepatorenal syndrome

Hepatorenal syndrome (HRS) is the development of renal dysfunction in patients with severe liver disease (acute or chronic) in the absence of any other identifiable causes of renal pathology.

Two types of HRS have been described. Type 1 is mainly associated with acute liver failure or alcoholic cirrhosis, but it can develop in any other form of liver failure. It is characterized by rapid deterioration of renal function, with marked increase in serum creatinine and urea. Hyponatremia and hyperkalemia are usual findings. Type 2 is a more stable form.

Peritoneal dialysis, hemodialysis, and hemofiltration remain controversial because of their limited benefit. However, they are still employed by certain centers in patients awaiting liver transplantation.



[ Q: 114 ] MRCPass - Gastroenterology

A 30 year old lady presents with a long history of abdominal pain and diarrhoea. She also gives a history of recurrent mouth ulcers. Recently the pain has become more intense, she has begun to lose weight and has developed fever with night sweats and she also complains of a rash over her legs.

On examination she is thin, she has clubbing and erythema nodosum. On examination of the abdomen a firm tender mass can be palpated in the right iliac fossa.

*In this patient, which of the following investigations is most appropriate?*

- 1- Colonoscopy

- 2- CT scan of the abdomen
- 3- X ray of the abdomen.
- 4- Small bowel follow through
- 5- Barium enema

#### Answer & Comments

**Answer:** 2- CT scan of the abdomen

The clinical features in this patient points towards a diagnosis of Crohn's disease. However, the features of increased pain, fever sweats and a mass suggest the patient may have developed an abscess in the right iliac fossa. Hence, imaging this area with CT scan to detect and treat the collection is the investigation of choice.



[ Q: 115 ] MRCPass - Gastroenterology

A 60 year old woman has a 15 year history of constipation. She undergoes a sigmoidoscopy and rectal biopsy.

This shows epithelium with pigment laden macrophages in lamina propria.

*What is the likely cause of these findings?*

- 1- Coeliac disease
- 2- Ulcerative colitis
- 3- Crohn's disease
- 4- Mesenteric ischaemia
- 5- Laxative abuse

#### Answer & Comments

**Answer:** 5- Laxative abuse

Melanosis coli is usually associated with chronic laxative use (senna), dark pigment is deposited in the lamina propria of the colon. It does not require medical or surgical intervention and is considered to be a benign pigmentation disorder.



Melanosis coli due to laxative abuse (dark appearance of colon)



[ Q: 116 ] MRCPass -  
Gastroenterology

A 45 year old man has a 10 year history of type 2 diabetes mellitus. In the past he has had fertility problems and has long standing generalised joint pains. Recently, he has been noted to have abnormal liver function tests.

The GP refers him to the clinic querying non-alcoholic fatty liver disease. On examination his skin is tanned, there is loss of body hair, gynaecomastia, hepatomegaly and testicular atrophy.

*How should this patient be treated?*

- 1- Oral hypoglycaemics
- 2- Interferon
- 3- Ribavirin
- 4- Penicillamine
- 5- Venesection

#### Answer & Comments

Answer: 5- Venesection

The patient is likely to have haemochromatosis in view of the history of diabetes, arthropathy, deranged liver function tests and bronze skin pigmentation. Ferritin and liver biopsy will help to confirm the diagnosis. Venesection is the best method of depleting body iron stores. Treatment consists

of bi-weekly venesection removing approximately 500 ml per week.



[ Q: 117 ] MRCPass -  
Gastroenterology

A 37 year old presents with a 10-day history of loose stools and mild abdominal discomfort, and recent onset of blood in stool. Ulcerative colitis was suspected by the gastroenterologist.

*Which one of the following is the investigation of choice?*

- 1- Sigmoidoscopy
- 2- Colonoscopy
- 3- Barium enema
- 4- Radionuclide scintigraphy
- 5- Angiography

#### Answer & Comments

Answer: 2- Colonoscopy

Colonoscopy is the investigation of choice to evaluate ulcerative colitis, features such as loss of vascular pattern, erythema, oedema, granular mucosa, blood, pseudopolyp, erosion, ulceration are seen.



[ Q: 118 ] MRCPass -  
Gastroenterology

A 45 year old woman has been a heavy alcoholic for 20 years, but has cut down on drinking for the past year.

She has abdominal pains, malaise and nausea. On examination she had moderate amounts of ascites and generalised abdominal tenderness.

Investigations show :

Haemoglobin 12 g/dL

WCC  $14 \times 10^9/L$

prothrombin time 22 s (<15s)

serum albumin 25 g/L (37-49)

serum total bilirubin 50 micromol/L (1-22)

ascitic fluid protein 27 g/L  
 ascitic fluid lactate 35 mg/dL  
 ascitic fluid amylase normal  
 ascitic fluid white cell count 650 cells/mL

*What is the likely reason for her deterioration?*

- 1- Wilson's disease
- 2- Spontaneous bacterial peritonitis
- 3- Hepatoma
- 4- Hepatic vein thrombosis
- 5- Pancreatic abscess

#### Answer & Comments

Answer: 2- Spontaneous bacterial peritonitis

Abdominal tenderness is found in more than 50% of patients with Spontaneous Bacterial Peritonitis. Findings on the abdominal examination can range from mild tenderness to overt rebound and guarding.

Traditionally, three fourths of SBP infections are caused by aerobic gram-negative organisms (50% of these being *Escherichia coli*), and one fourth of these infections are due to aerobic gram-positive organisms (streptococcal species).

An ascitic fluid neutrophil count of >250 cells/mL and ascites lactate level of >25 mg/dL are the single best predictors of SBP. A combination of an aminoglycoside and ampicillin or cefotaxime can be used.



[ Q: 119 ] MRCPass -  
Gastroenterology

A 33 year lady presents with intense pruritus in her third trimester of pregnancy. Clinically there are no abnormalities apart from scratch marks.

Investigations reveal: ALT 150 U/L, Alkaline phosphatase 320 U/L, bilirubin 70 micromoles/l. FBC is normal.

*What should be the next management step?*

- 1- Hepatitis test
- 2- Liver biopsy
- 3- Intrahepatic shunting
- 4- Ursodeoxycholic acid
- 5- Azathioprine

#### Answer & Comments

Answer: 4- Ursodeoxycholic acid

The patient has intrahepatic cholestasis of pregnancy. Treatment is symptomatic with ursodeoxycholic acid (cholestyramine and high dose steroids can also be used). The most common symptom of intrahepatic cholestasis of pregnancy is itching which typically develops in the third trimester of pregnancy.

The itching begins on the palms and soles, and then spreads to the rest of the body. The rash of ICP is caused by scratching the intensely itchy skin. Jaundice occurs in 10% to 15% of cases and typically develops 2 to 4 weeks after the itching starts. After delivery, both itching and jaundice resolve spontaneously. ICP does recur with subsequent pregnancies in 40% to 50% of women.



[ Q: 120 ] MRCPass -  
Gastroenterology

A 35 year old man presents with epigastric pains which are burning in nature and worse at night. He undergoes endoscopy and the investigation confirms a diagnosis of gastro-oesophageal reflux disease (GORD).

*Which of the following is most likely to relieve his symptoms?*

- 1- Omeprazole
- 2- Lactulose
- 3- Brandy
- 4- Ibuprofen
- 5- Diclofenac

## Answer &amp; Comments

**Answer:** 1- Omeprazole

The most effective drugs in Gastro-oesophageal reflux are proton pump inhibitors such as omeprazole. H2 receptor antagonists (ranitidine) and Cisapride have also been shown to be effective. Nitrates and caffeine can also relieve symptoms by relaxing lower oesophageal tone.



[ Q: 121 ] MRCPass -  
Gastroenterology

A 35 year old man is referred for lethargy to the gastroenterologist. His GP has recently diagnosed diabetes and he is on insulin injections. He drinks 12 units of alcohol per week. On examination he has a grey discolouration to his skin. There are no signs of chronic liver disease, but he has a smooth palpable liver edge of three finger breadths below the costal margin.

His blood tests show a Hb 13.5 g/dl, WCC of  $12 \times 10^9/L$ , platelets  $145 \times 10^9/L$ , sodium 133 mmol/l, potassium 4.5 mmol/l, urea  $9 \mu\text{mol/l}$ , creatinine  $\mu\text{mol/l}$  bilirubin  $23 \mu\text{mol/l}$ , ALT 150 U/l, ALP 110 U/l.

*Which further test is most likely to yield the diagnosis?*

- 1- Serum copper and caeruloplasmin
- 2- Serum ferritin
- 3- Ultrasound of abdomen
- 4- Serum amylase
- 5- Secretin test

## Answer &amp; Comments

**Answer:** 2- Serum ferritin

Haemochromatosis is described. There is grey pigmentation of the skin and hepatomegaly. The condition can be made worse when there is additional alcohol intake.



[ Q: 122 ] MRCPass -  
Gastroenterology

A 55 year old woman presents with a 6 month history of bloody diarrhoea. She has not had any previous admissions or serious illnesses. On examination, her abdomen is distended and tender on the left side.

Rectal examination reveals small amount of faeces.

Blood tests show a Hb 11.0 g/dl WCC  $15.6 \times 10^9/l$ . platelets  $450 \times 10^9/l$ . Sodium is 139 mmol/l, potassium is 4.6 mmol/l, urea  $8.6 \mu\text{mol/l}$ . creatinine  $130 \mu\text{mol/l}$ . CRP is 35 mg/l.

*What is the next best further investigation?*

- 1- Colonoscopy
- 2- X ray of abdomen
- 3- Sigmoidoscopy
- 4- CT of the abdomen
- 5- MRI of abdomen

## Answer &amp; Comments

**Answer:** 2- X ray of abdomen

The imperative management is to exclude a toxic megacolon. This is a patient with bloody diarrhoea who could have ulcerative colitis, and a distended tender abdomen indicates possible acute abdomen.



Toxic Megacolon





[ Q: 123 ] MRCPass -  
Gastroenterology

A 40 year old man is being investigated for a 3 year history of arthralgia. On examination, his skin colour was normal and there was no evidence of jaundice or hepatomegaly. He has the following results:

Alanine aminotransferase 32 U/L (5-35)

Aspartate aminotransferase 28 U/L (1-31)

Fasting plasma glucose 7.4 (3.0-6.0)

Ferritin 550 ug/L (15-300)

*What is the next best investigation?*

- 1- Bone marrow biopsy
- 2- Transferrin saturation
- 3- Copper and caeruloplasmin
- 4- Serum transferrin receptors
- 5- Liver biopsy

Answer & Comments

Answer: 2- Transferrin saturation

Serum ferritin has many false positives and the patient should have the transferrin saturation done. The diagnosis of iron overload and potentially hereditary hemochromatosis should be suspected in men whose transferrin saturation is greater than 55% and in women whose transferrin saturation is greater than 50%.

In patients with confirmed hemochromatosis, one of 2 gene defects described (CYS282 tyrosine or H63D mutation) is found in >85% of patients of Northern European descent.



[ Q: 124 ] MRCPass -  
Gastroenterology

A 35 year man has abdominal pains, weight loss and diarrhoea. He was subsequently found to be lactose intolerant and a small bowel biopsy showed changes consistent with in coeliac disease.

He has also noticed that he is developing itchiness and a generalised rash.

*Which one of the following skin conditions is it likely to be?*

- 1- Erythema marginatum
- 2- Dermatitis herpetiformis
- 3- Erythema chronicum migrans
- 4- Pityriasis rosea
- 5- Tinea versicolor

Answer & Comments

Answer: 2- Dermatitis herpetiformis

In coeliac disease, dermatitis herpetiformis manifests as a pruritic rash. It is a chronic, extremely itchy rash consisting of papules and vesicles. Dermatitis herpetiformis is associated with sensitivity of the intestine to gluten in the diet (celiac sprue). The vesicles or papules appear on the elbow s, knees, back, and buttocks (pressure points). It may also present as a patch of red skin with little water blisters scattered about.



Dermatitis herpetiformis



[ Q: 125 ] MRCPass -  
Gastroenterology

A 40 year old man has had intermittent diarrhoea and joint pains for 6 months. On examination he has limited vertical eye movements.

*Which pathogen is the likely cause of his symptoms?*

- 1- Salmonella enteritidis
- 2- Cryptosporidium



- 3- Trophyrema whippleii
- 4- Prion protein
- 5- Syphilis

#### Answer & Comments

**Answer:** 3- Trophyrema whippleii

Whipple's disease characteristically occurs in middle-aged men, who present with weight loss, fever, abdominal pain, arthralgias and intestinal symptoms of diarrhea and malabsorption.

Confusion, memory loss, or uncontrolled eye movements indicate that the infection has travelled to the CNS.

Trimethoprim - sulfamethoxazole is recommended; treatment is continued for one year.



[ Q: 126 ] MRCPass -  
Gastroenterology

A 40 year old man presented with a 5 day history of bloody diarrhoea. On examination, he was afebrile, jaundiced and pale. There was no organomegaly but there was mild lower abdominal tenderness.

Investigations reveal:

Haemoglobin 8.1 g/dL

White cell count  $17.5 \times 10^9/L$

Platelets  $70 \times 10^9/L$

urea 11  $\mu\text{mol/l}$

creatinine 220  $\mu\text{mol/l}$

aspartate aminotransferase 110 IU/L

Prothrombin time 12s (11.5-15.5)

Blood film shows fragmented red cells

**What is the likely diagnosis?**

- 1- Ulcerative colitis
- 2- Escherichia coli 0157 colitis
- 3- Salmonella enterocolitis
- 4- Campylobacter colitis

- 5- Yersinia colitis

#### Answer & Comments

**Answer:** 2- Escherichia coli 0157 colitis

The combination of haemolytic anaemia and thrombocytopenia is consistent with haemolytic uraemic syndrome (HUS - TTP). The most likely cause of diarrhoea is E coli 0157.

Hemolytic uremic syndrome (HUS) is characterized by the triad of microangiopathic hemolytic anemia, thrombocytopenia, and acute renal failure. Diarrhea and upper respiratory infection are the most common precipitating factors. Other bacterial agents include Shigella, Salmonella, Yersinia, and Campylobacter species.



[ Q: 127 ] MRCPass -  
Gastroenterology

A 40 year old man visit his GP with symptoms of flushing and dizziness. He also has watery diarrhoea several times a month. On examination he has a systolic murmur in the tricuspid area and a parasternal heave over the left sternal edge. A 24 hour urine shows raised 5HT levels.

**What is the diagnosis?**

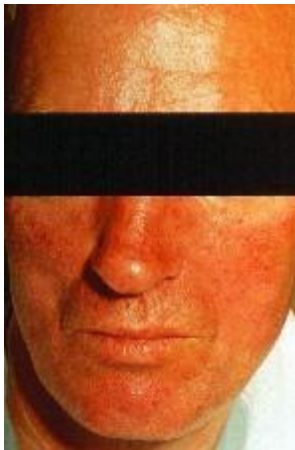
- 1- Tropical Sprue
- 2- Crohn's disease
- 3- Pheochromocytoma
- 4- Carcinoid syndrome
- 5- Pernicious anaemia

#### Answer & Comments

**Answer:** 4- Carcinoid syndrome

Carcinoid syndrome is diagnosed by raised urinary 5-HT levels. A precursor of 5HT, tryptophan is highly metabolised and consequently niacin deficiency (pellagra) occurs. The rest of the D's dementia,

dermatitis (a photosensitive rash) and diarrhoea occur in pellagra.



Flushing seen in carcinoid syndrome



[ Q: 128 ] MRCPass -  
Gastroenterology

A 65 year old man is investigated for lower back pain. He also complains of weight loss and fevers. On review ing his history, he has been told before that he has ankylosing spondylitis.

On admission, his blood tests show a urea of 25  $\mu\text{mol/l}$  and a creatinine of 350  $\mu\text{mol/l}$ . An ultrasound of the kidneys shows hydronephrosis bilaterally. CT scan shows fibrotic para-aortic masses.

*Which of the following is the diagnosis?*

- 1- Carcinoid syndrome
- 2- Retroperitoneal fibrosis
- 3- Amyloidosis
- 4- Metastatic bladder cancer
- 5- Lymphoma

#### Answer & Comments

**Answer:** 2- Retroperitoneal fibrosis

The symptoms of fevers, weight loss and lower back pain are classical for retroperitoneal fibrosis. There is an

association with inflammatory conditions such as SLE, rheumatoid arthritis, ankylosing spondylitis, Hashimoto's thyroiditis and glomerulonephrosis. CT or MRI shows fibrotic para-aortic masses causing ureteric obstruction.



[ Q: 129 ] MRCPass -  
Gastroenterology

A 20 year old nurse has recently been diagnosed with hepatitis B and has had serology measured.

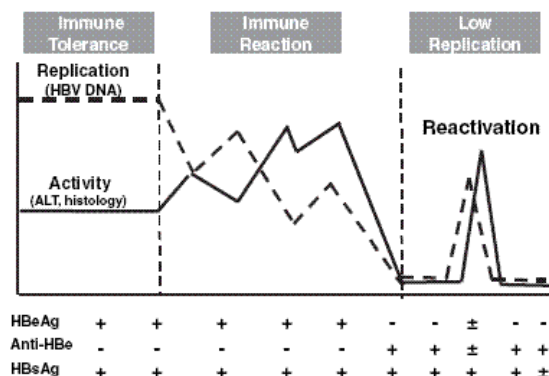
*Which of the following is the best marker of infectivity?*

- 1- DsDNA
- 2- HbcAg
- 3- HBeAg
- 4- HBsAg
- 5- HBs Ab

#### Answer & Comments

**Answer:** 3- HBeAg

HBeAg (not HBcAg) is the best marker of infectivity, and is used as an important criteria for selection of patients who have chronic hepatitis B for interferon ( $\alpha$ -2B) therapy. HBV DNA and HBeAg levels are measured in response to the therapy and undetectable levels are considered successful treatment.





[ Q: 130 ] MRCPass -  
Gastroenterology

A 60 year old woman with arthritis was referred for investigation of iron deficiency anaemia. Endoscopy several superficial antral erosions. A small bowel biopsy showed mild villous blunting, apoptotic bodies, occasional eosinophils, mild increase in chronic inflammatory cells. Colonoscopy was unremarkable.

*What is the likely cause of the anaemia?*

- 1- Whipple's disease
- 2- Ulcerative colitis
- 3- Nonsteroidal anti inflammatory drugs
- 4- Myelodysplastic syndrome
- 5- Coeliac disease

Answer & Comments

**Answer:** 3- Nonsteroidal anti inflammatory drugs

Superficial ulceration on the OGD suggests that the anaemia is due to NSAID therapy. Small bowel biopsy is to exclude coeliac disease, in this case there is no villous atrophy.

Colonoscopy is to exclude angiodysplasia and a tumour.



[ Q: 131 ] MRCPass -  
Gastroenterology

A 65 year old lady has rheumatoid arthritis. In the last 6 months she has become more lethargic and undergoes evaluation. On examination, she has palpable splenomegaly.

Her blood tests reveal Hb of 8.5 g/dl, WCC of  $3 \times 10^9$  /l with a neutrophil count of 0.9, and platelet count of  $160 \times 10^9$  /L.

*What is the diagnosis?*

- 1- Aplastic anaemia
- 2- Juvenile chronic arthritis
- 3- Haemochromatosis

- 4- Felty's syndrome
- 5- Ankylosing spondylitis

Answer & Comments

**Answer:** 4- Felty's syndrome

Felty's syndrome consists of a triad of neutropenia, hypersplenism and rheumatoid arthritis, which is the most likely unifying diagnosis. Although the pathophysiology of Felty syndrome is not fully known, evidence points to splenic sequestration and subsequent granulocyte destruction.

The extra-articular manifestations of RA (eg, rheumatoid nodules, pleuropericarditis, vasculitis, peripheral neuropathy, episcleritis, other forms of eye involvement, Sjögren syndrome, adenopathy, skin ulcers) are more common in patients who develop Felty syndrome.



[ Q: 132 ] MRCPass -  
Gastroenterology

A 60 year old woman presents with a history of worsening dysphagia over many years. Recently there were episodes of atypical central chest discomfort and cough. She also mentioned occasional regurgitation of her food.

An X ray shows narrowing at the level of the gastroesophageal junction.

*What is the likely diagnosis?*

- 1- Oesophageal carcinoma
- 2- Pharyngeal pouch
- 3- Oesophagitis
- 4- Barrett's oesophagus
- 5- Achalasia

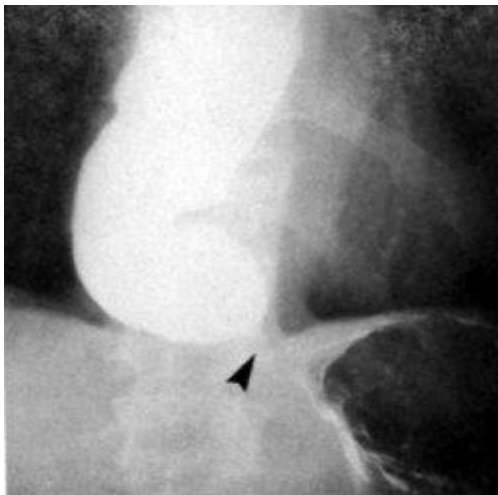
Answer & Comments

**Answer:** 5- Achalasia

Achalasia presents often in 3rd to 5th decade. The classical triad of achalasia is dysphagia

(difficulty swallowing) to fluids and later solids, regurgitation of undigested food, and chest pain. Other symptoms may include difficulty belching, frequent hiccups, cough. 30% have a nocturnal cough due to aspiration of oesophageal contents.

An X ray or barium Swallow shows narrowing at the level of the gastroesophageal junction of the lower esophagus and various degrees of megaesophagus (esophageal dilation) as the esophagus is gradually stretched by retained food. Manometry is the key test for establishing the diagnosis. A probe measures the pressure waves in different parts of the esophagus and stomach during the act of swallowing.



Achalasia



[ Q: 133 ] MRCPass -  
Gastroenterology

A 35 year old patient has had a hepatitis test for investigation of jaundice. He has a positive Hep BsAg (HBsAg) and has IgM antibodies to Hep Bcore (anti-HBc).

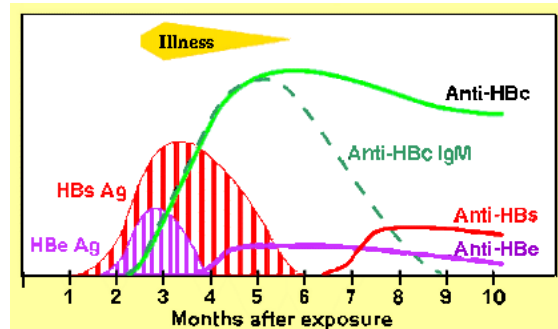
*What is he likely to have?*

- 1- Hepatitis D infection
- 2- Seroconversion illness
- 3- Chronic hepatitis B infection
- 4- Acute hepatitis B infection
- 5- Recent vaccination

### Answer & Comments

**Answer:** 4- Acute hepatitis B infection

The positive anti-HBc (IgM) and HBsAg suggests acute infection. When the infection resolves, HBsAg becomes negative and anti-HBc (IgG) is positive. In patients who have been vaccinated, HBsAg is negative and anti-HBs is positive.



[ Q: 134 ] MRCPass -  
Gastroenterology

A 25 year old woman has type 1 diabetes. She has weight loss of 1 stone over the past 3 months, and irregular menstrual cycles. Her bowel habit has been unchanged. On examination her BMI was 24 kg/m<sup>2</sup>.

Investigations show a haemoglobin of 8.1 g/dl with a MCV of 69 fl.

*Which is the likely diagnosis?*

- 1- Heavy Periods
- 2- Bacterial overgrowth
- 3- Crohn's disease
- 4- Dietary iron deficiency
- 5- Coeliac disease

### Answer & Comments

**Answer:** 5- Coeliac disease

Coeliac disease is most likely as this patient autoimmune phenomenon (diabetes), with an iron deficiency anaemia and no symptoms of diarrhoea. Patients with type 1 diabetes are at up to six times greater risk of having coeliac

disease. Antibodies to gliadin should be sent and the diagnosis of coeliac disease can be confirmed by taking a biopsy from the duodenum (small bowel just beyond the stomach) which will show villous atrophy.



[ Q: 135 ] MRCPass -  
Gastroenterology

A 50 year old alcoholic patient presents with confusion and severe derangement of liver function. On examination, his MMSE score is 22 / 30. He has signs of spider naevi, jaundice and gross ascites.

*Which one of the following features defines fulminant acute hepatic failure?*

- 1- Spider naevi
- 2- Leukonychia
- 3- Jaundice
- 4- Ascites
- 5- Encephalopathy

#### Answer & Comments

**Answer:** 5- Encephalopathy

By definition, fulminant hepatic failure is associated with encephalopathy.

Prognosis is poor regardless of speed of disease progression. It typically presents acutely when previous hepatic disease is unknown. Commonest causes in the UK are paracetamol overdose and hepatitis.



[ Q: 136 ] MRCPass -  
Gastroenterology

A 50 year old woman has symptoms of pruritis, steatorrhoea and easy bruising. On examination, she is jaundiced and had xanthelasmata. Her skin was pigmented and has 8 spider naevi. There is also hepatosplenomegaly.

*What is the likely overall diagnosis?*

- 1- Primary biliary cirrhosis

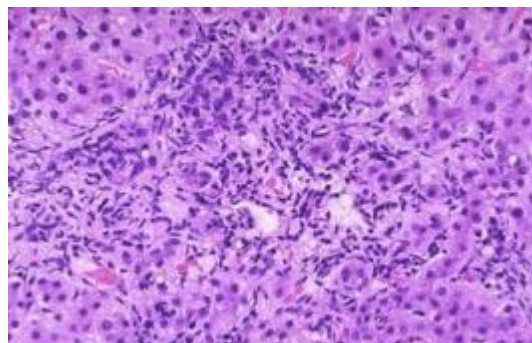
- 2- Wilson's disease
- 3- Budd Chiari syndrome
- 4- Alpha 1 antitrypsin deficiency
- 5- Alcoholic liver disease

#### Answer & Comments

**Answer:** 1- Primary biliary cirrhosis

She has chronic liver disease with portal hypertension. The 2 main conditions causing pigmentation along with signs of chronic liver disease are primary biliary cirrhosis (PBC) & haemochromatosis. Xanthelasmata are common in PBC but not in haemochromatosis. PBC is a chronic cholestatic inflammatory liver disease, aetiology of which probably autoimmune. It commonly affects middle aged women.

Serum AntiMitochondrial Antibody is positive in 95 % of cases.



Primary biliary cirrhosis



[ Q: 137 ] MRCPass -  
Gastroenterology

A 45 year old lady has a two month history of nausea, jaundice and dark urine. She also has a history of arthralgia and autoimmune thyroid disease.

On examination, her abdomen was non-tender with 4 cm hepatosplenomegaly.

Investigations reveal AST 1675 U/L (5 - 40), ALT 3900 U/L (5 -40), GGT 179 U/L (10 - 60), bilirubin 65 (1-22)  $\mu$ mol/l, increase in total globulin and smooth muscle antibodies are positive. Serum immunoglobulins were



elevated with IgG of 2390 mg/dl (694 - 1618) and IgA of 306 mg/dl (68 - 263). Anti-nuclear antibodies (ANA) were positive at 1:320 titer in a homogenous speckled pattern. Anti-smooth muscle and liver-kidney microsomal antibodies were positive.

*What is the likely diagnosis?*

- 1- Wilson's disease
- 2- Cholangiocarcinoma
- 3- Primary biliary cirrhosis
- 4- Autoimmune hepatitis
- 5- Crohn's disease

#### Answer & Comments

Answer: 4- Autoimmune hepatitis

In autoimmune hepatitis, response to steroids is excellent and it improves five-year survival, but does not prevent development of cirrhosis. Azathioprine is an useful adjunct to steroids and allows reduction of steroid doses, thus reduces the risk of osteoporosis.

Chronic autoimmune hepatitis is a chronic hepatitis of unknown origin that predominantly affects young and middle aged women. It is associated with HLA types A1, B8, DR3 and Dw 3. Presentation is usually insidious. The patient may be generally unwell and jaundiced. Amenorrhoea is common. Examination may reveal signs of chronic liver disease, hepatomegaly and splenomegaly.

Investigations show raised inflammatory markers and serum transaminases. ANA and smooth muscle antibodies are usually positive.



[ Q: 138 ] MRCPass - Gastroenterology

A 50 year old man presents has a 6 month history of severe indigestion. 3 years ago he had a duodenal ulcer seen on endoscopy.

Investigations reveal:

Fasting gastrin 150 pmol/L (<55)

*Where is gastrin produced?*

- 1- Oesophagus
- 2- Colonic mucosa
- 3- G cells of gastric antrum
- 4- Islet cells
- 5- Small intestine

#### Answer & Comments

Answer: 3- G cells of gastric antrum

Gastrin is produced in 2 forms by the G cells of gastric antrum. It stimulates parietal cells produce hydrochloric acid. Its production is stimulated by neural reflex pathways and also by direct effect of digested peptides on the G cells. It also stimulates the production of bicarbonate.



[ Q: 139 ] MRCPass - Gastroenterology

A 65 year old woman has a diagnosis of insulin dependent diabetes mellitus (poorly controlled) for 25 years. She complains of repeated episodes of abdominal pain following meals. These episodes have become more frequent over the past 3 months. There is no abdominal tenderness on palpation.

*Which of following finding is likely be present?*

- 1- Autonomic neuropathy
- 2- Hepatitis
- 3- Mesenteric artery occlusion
- 4- Chronic pancreatitis
- 5- Acute pancreatitis

#### Answer & Comments

Answer: 3- Mesenteric artery occlusion

Diabetes, especially Type 2 diabetes is associated with macrovascular disease. If the mesenteric artery is stenosed or occluded then lack of blood flow to the bowel will produce ischaemic pains.



[ Q: 140 ] MRCPass -  
Gastroenterology

A 60 year old man is investigated for weight loss and dyspepsia. Endoscopic examination reveals an ulcerated lesion in stomach. Biopsy shows the presence of a low grade mucosa associated lymphoma and *Helicobacter pylori*. CT of chest & abdomen shows no metastases.

*What is the best treatment option for this patient?*

- 1- Radiotherapy
- 2- *Helicobacter pylori* eradication
- 3- Bilroth's gastrectomy
- 4- Oral chlorambucil
- 5- CHOP therapy

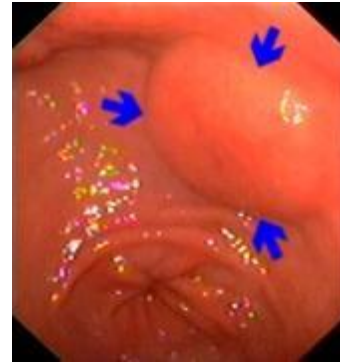
Answer & Comments

Answer: 2- *Helicobacter pylori* eradication

The diagnosis is a gastric MALT tumour. These are usually marginal zone B cell lymphomas associated an excellent prognosis.

MALT lymphoma is the third most common type of non-Hodgkin lymphoma, although it only accounts for about 7-8% of these tumours. MALT lymphomas have been described at almost all extra-nodal sites, but are most commonly found in the gastrointestinal tract (stomach is the commonest).

Low grade gastric MALT tumours which are associated with *Helicobacter Pylori* infection respond in over 80% of cases to *helicobacter* eradication. A proportion of patients will not respond to eradication therapy alone and will go on to more conventional anti-lymphoma therapies such as cyclophosphamide, chlorambucil, nucleoside analogues or radiotherapy.



A MALT tumour







## [ Q: 141 ] MRCPass - Rheumatology

A 35 year old man presents with a 6 month history of arthralgia, mouth ulceration and eye irritation. On examination, he had some ulceration in the mouth, bilaterally swollen wrists and reduced range of movements of both knees.

His investigations showed: white cell count  $11 \times 10^9/L$ , C reactive protein 100 mg/dl, Rheumatoid factor negative.

*What is the likely diagnosis?*

- 1- Reiter's syndrome
- 2- Sjogren's syndrome
- 3- Ankylosing spondylitis
- 4- Behcet's syndrome
- 5- Sarcoidosis

## Answer &amp; Comments

Answer: 4- Behcet's syndrome

Behcet's syndrome is a multisystem disorder characterised by recurrent oral genital ulceration, eye lesions (anterior and posterior uveitis or retinal vasculitis), skin lesions, (erythema nodosum, papulopustular lesions folliculitis) and a positive pathergy test.

The pathergy phenomenon is considered an outstanding feature of Behcet disease. Following a needle prick or intradermal injection with saline or dilute histamine, the puncture site becomes inflamed and develops a small sterile pustule due to hyperactivity of the skin to any intracutaneous insult.



Oral Ulceration in Behcet's disease



## [ Q: 142 ] MRCPass - Rheumatology

A 33 year old female with systemic lupus erythematosus has arthralgia involving her upper limbs. She also has a butterfly facial rash and a rash on the trunk.

Urine dipstick shows no Proteinuria or haematuria. Her renal function is normal.

*Which one of the following medications is most appropriate?*

- 1- Methotrexate
- 2- Prednisolone
- 3- Azathioprine
- 4- Hydroxychloroquine
- 5- Cyclosporin

## Answer &amp; Comments

Answer: 4- Hydroxychloroquine

NSAIDs and hydroxychloroquine are used for skin involvement and arthritis.

NSAIDs are used for mild disease. Hydroxychloroquine is useful for disease not controlled by NSAIDs. Steroids are used in moderate to severe disease. Immunosuppressive treatments such as azathioprine and cyclophosphamide are used typically when there is renal or cerebral disease.



## [ Q: 143 ] MRCPass - Rheumatology

A 75 year old woman with long-standing Rheumatoid arthritis has great difficulty walking and comments that both her legs are stiff and 'jumpy'.

*What is the most likely cause of the presentation?*

- 1- Ankylosing spondylitis
- 2- Syringomyelia
- 3- Osteoporosis
- 4- Atlanto-axial instability
- 5- Disc compression

## Answer &amp; Comments

**Answer:** 4- Atlanto-axial instability

Cervical cord compression due to atlanto-axial instability is the most likely cause of UMN nerve weakness.



## [ Q: 144 ] MRCPass - Rheumatology

A 50 year old woman has severe rheumatoid arthritis. She is admitted with worsening breathlessness.

She is currently on ibuprofen, methotrexate, celecoxib, and paracetamol. On examination, she has features of rheumatoid changes in her hands and looks pale. There is no palpable lymphadenopathy and no abdominal masses.

Investigations showed that her Hb level is 7.8 g/dl with a MCV of 90, WCC  $2.1 \times 10^9/l$  and platelets  $55 \times 10^9/l$ .

Reticulocyte count is 0.3%(0.5% to 1.5%).

**What is the likely cause of the anaemia?**

- 1- NSAID use and GI bleed
- 2- Treatment with celecoxib
- 3- Treatment with methotrexate
- 4- Anaemia of chronic disease
- 5- Felty's syndrome

## Answer &amp; Comments

**Answer:** 3- Treatment with methotrexate

The patient has an aplastic anaemia which can be caused by methotrexate or azathioprine, DMARDs (penicillamine or gold).

Abnormally low reticulocyte count can be attributed to chemotherapy, aplastic anemia, pernicious anemia, bone marrow malignancies and lowerythropoietin levels.



## [ Q: 145 ] MRCPass - Rheumatology

A 65 year old woman presents with dry eyes and a dry mouth. Her investigations show : ANA strongly positive (1:1600),

antiRo/SSA antibodies strongly positive, rheumatoid factor positive, IgG markedly elevated at 42 g/l

(normal <15 g/l), IgM and IgA levels are normal.

**What is the likely diagnosis?**

- 1- Monoclonal gammopathy of unknown significance
- 2- Primary Sjogren's Syndrome
- 3- Systemic Lupus Erythematosus
- 4- Reiter's syndrome
- 5- Polyarteritis Nodosa

## Answer &amp; Comments

**Answer:** 2- Primary Sjogren's Syndrome

The clinical features and are consistent with primary Sjögren's Syndrome.

Hypergammaglobulinaemia is present in 80% of individuals. ANA, AntiRo/SSA antibodies are present in approximately 90% of individuals and there can also be a weakly positive rheumatoid factor.



Dry mouth seen in Sjogren's syndrome



## [ Q: 146 ] MRCPass - Rheumatology

A 55 year old female has been on long-term steroids for chronic obstructive pulmonary disease. She complains of pain in her right groin radiating down the anteromedial thigh. She has an antalgic gait.

On examination of the hip, there is decreased range of movement especially flexion, abduction and internal rotation.

*What is the likely diagnosis?*

- 1- Osteoarthritis
- 2- Rheumatoid arthritis
- 3- Metastatic hip lesion
- 4- Avascular necrosis of the femoral head
- 5- Hairline fracture

#### Answer & Comments

Answer: 4- Avascular necrosis of the femoral head

In a patient on long term steroids presenting with groin pains radiating to the thigh associated with an antalgic gait and decreased range of movement of the hip, the most likely diagnosis is avascular necrosis of the femoral head.

In this condition, MRI is the most sensitive and specific technique and is useful for early diagnosis before collapse of bone occurs. CT scan and x-ray are useful to rule out advanced disease if duration is not clear. Bone scanning is more sensitive than x-ray but is non-specific.



MRI showing avascular necrosis of the femoral head



[ Q: 147 ] MRCPass - Rheumatology

A 60 year old woman on treatment for longstanding rheumatoid arthritis presents with breathlessness. She complains of a dry

cough. The oxygen saturation was found to be 85% on air.

The chest x ray shows a diffuse bilateral interstitial infiltrate.

Blood cultures and sputum cultures are negative.

*Which drug is likely to have caused this adverse effect?*

- 1- Cyclosporin
- 2- Cyclophosphamide
- 3- Gold
- 4- Methotrexate
- 5- Sulphasalazine

#### Answer & Comments

Answer: 4- Methotrexate

Pneumonitis is a serious and unpredictable side-effect of treatment with methotrexate (MTX) that may become life-threatening. Chest radiography reveals a diffuse interstitial or mixed interstitial and alveolar infiltrate, with a predilection for the lower lung fields.

Pulmonary function tests show a restrictive pattern with diminished diffusion capacity. Lung biopsy reveals cellular interstitial infiltrates, granulomas or a diffuse alveolar damage pattern accompanied by perivascular inflammation.



[ Q: 148 ] MRCPass - Rheumatology

A 65 year old man presents with recently developed an acutely painful right knee. On examination, he had a temperature of 37.2°C and a hot and swollen right knee.

His white cell count which was raised at  $14 \times 10^9/L$ . A knee X ray showed reduced joint space and chondrocalcinosis.

Culture of aspirated fluid showed no growth.

*What is the likely diagnosis?*

- 1- Psoriatic arthropathy

2- Rheumatoid arthritis

3- Pseudogout

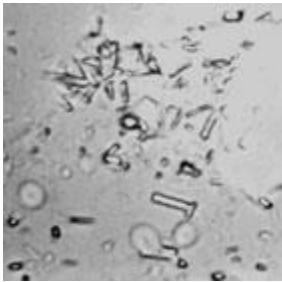
4- Septic arthritis

5- Osteomalacia

#### Answer & Comments

Answer: 3- Pseudogout

The clinical picture is typical of pseudogout. Calcification of the articular cartilage would be consistent and the culture results excludes septic arthritis. The diagnosis can be confirmed by the presence of calcium pyrophosphate crystals in joint fluid demonstrating a positive birefringence under polarised light.



Calcium pyrophosphate crystals



#### [ Q: 149 ] MRCPass - Rheumatology

A 60 year old man presents with a painful swollen left knee as well as pain and stiffness of both his hands.

On examination his skin is pigmented. There is tenderness and swelling of the 2nd and 3rd metacarpophalangeal joints of both hands, he has hepatomegaly of 8 cm below the costal margin.

His knee is swollen and aspiration of the joint yields turbid, straw coloured fluid.

*Which one of the following diagnosis is likely?*

1- Wilson's disease

2- Haemochromatosis

3- Pseudohypoparathyroidism

4- Pseudopseudohypoparathyroidism

5- Ankylosing spondylitis

#### Answer & Comments

Answer: 2- Haemochromatosis

The history of abdominal pain together with skin pigmentation and hepatomegaly suggest the patient has haemochromatosis. Haemochromatosis is associated with chondrocalcinosis, which commonly affects the 2nd and 3rd metacarpophalangeal joints. The acute arthropathy is likely to be pyrophosphate crystal arthritis.



#### [ Q: 150 ] MRCPass - Rheumatology

A 70 year old man presents with bony swellings of the DIP joints on both hands. They were painful a year ago but are now painless.

*The most likely diagnosis is :*

1- Heberden's nodes

2- Bouchard's nodes

3- Osler's nodes

4- Gouty tophi

5- Charcot's joints

#### Answer & Comments

Answer: 1- Heberden's nodes

The most likely diagnosis is osteoarthritis. At the DIP joints, swelling are known as

Heberden's nodes and at the PIP joints, they are known as Bouchard's nodes.



Heberden's node



## [ Q: 151 ] MRCPass - Rheumatology

A 60 year old man presents with gouty tophi. He has been commenced on allopurinol but develops severe joint pains 3 days later. On examination, he has a temperature of 39°C and erythematous swelling of his wrists, knees and ankles.

Investigations reveal: urate 0.6 (0.23-0.45), creatinine 180 mg/L.

*Which of the following is likely to have caused the presentation?*

- 1- Allopurinol
- 2- Colchicine
- 3- Prednisolone
- 4- Pseudogout
- 5- Septic arthritis

## Answer &amp; Comments

Answer: 1- Allopurinol

Allopurinol blocks uric acid production and is the drug most often used in long-term treatment for older patients and overproducers of uric acid. Allopurinol is taken orally once a day in doses of 100 mg to 600 mg, depending on the patient's response to treatment.

Between 3% to 5% of patients experience leukopenia, thrombocytopenia, diarrhea, headache, and fever.



## [ Q: 152 ] MRCPass - Rheumatology

A 35 year old retired athlete presents with severe burning pain affecting the right leg and foot. 4 months earlier, he had several arthroscopic washouts for septic arthritis affecting his right knee, which followed an injury.

Examination reveals a reduced range of movement of the right knee and ankle. There was diffuse swelling of the right leg and foot with overlying cool, scaly skin.

*What is the likely diagnosis?*

- 1- Compartment syndrome
- 2- Deep vein thrombosis
- 3- Reflex sympathetic dystrophy
- 4- Raynaud's phenomenon affecting the leg
- 5- Venous varicosities

## Answer &amp; Comments

Answer: 3- Reflex sympathetic dystrophy

This clinical scenario is compatible with a diagnosis of reflex sympathetic dystrophy or complex regional pain syndrome following the previous injury. Reflex sympathetic dystrophy, also known as RSD, is a condition of burning pain, stiffness, swelling, and discoloration of the affected area.

The pain is often severe and disproportionate to the signs and follows a non-anatomic distribution. The skin changes are due to the associated autonomic dysfunction.



Reflex sympathetic dystrophy affecting the right foot



## [ Q: 153 ] MRCPass - Rheumatology

A 75 year old has had increasing back and leg pains several years. X rays reveal bony sclerosis of sacroiliac, lower vertebral and upper tibial regions. He mentions greater difficulty hearing over the recent years.



Blood tests reveal an elevated serum alkaline phosphatase.

*What is the likely diagnosis?*

- 1- Paget's disease of bone
- 2- Osteoarthritis
- 3- Osteomalacia
- 4- Monoclonal gammopathy of uncertain significance
- 5- Multiple myeloma

#### Answer & Comments

Answer: 1- Paget's disease of bone

In Paget's disease, onset of symptoms is usually insidious, with pain, stiffness, bone deformity, headaches, decreasing auditory acuity, and increasing skull size.

Signs may be bitemporal skull enlargement with frontal "bossing," dilated scalp veins, nerve deafness in one or both ears, angioid streaks in the fundus of the eye, and anterolateral bowing of the thigh or leg with warmth and periosteal tenderness.

Paget lesions are metabolically active and highly vascular and may lead to high-output heart failure.

Deformities may develop from bowing of the long bones or osteoarthritis of adjacent joints.

Pathologic fractures may be the presenting finding. Characteristic x-ray findings include increased bone density, abnormal architecture, cortical thickening, bowing, and overgrowth.

Biochemistry includes elevated serum alkaline phosphatase (or bone-specific alkaline phosphatase) and increased urinary excretion of pyridinoline cross-links. Serum calcium and phosphorus levels usually are normal, but serum calcium may increase during bed rest.



#### [ Q: 154 ] MRCPass - Rheumatology

A 55 year old patient presents with a two week history of pain and stiffness in her shoulders and wrists. The symptoms improve over the day. On examination, there was synovitis of both wrists and proximal muscle wasting. Her ESR was 40 mm/hr.

*What is the likely diagnosis?*

- 1- Dermatomyositis
- 2- Systemic lupus erythematosus
- 3- Rheumatoid arthritis
- 4- Polymyalgia rheumatica
- 5- Osteoarthritis

#### Answer & Comments

Answer: 3- Rheumatoid arthritis

In a middle aged female, acute arthritis of shoulders and wrists along with synovitis are highly suggestive of acute Rheumatoid Arthritis.



Synovitis involving the wrist in rheumatoid arthritis



#### [ Q: 155 ] MRCPass - Rheumatology

A 45 year old woman presents with numbness and weakness of her upper and lower limbs. She developed asthma at the age of 30.

On examination she looks unwell. She has palpable purpura over her face and over her elbows and knees.

On neurological examination she has a right sided wrist drop and there is weakness of



dorsiflexion of her right foot. Sensation is also impaired over the dorsum of her right foot.

Investigations:

CXR is normal.

Hb 10.9 g/dL

MCV 90 fl

WBC  $23 \times 10^9 /l$

Eosinophils 12%

ANCA negative

*What is the likely diagnosis?*

- 1- Polyarteritis nodosa
- 2- Churg Strauss syndrome
- 3- SLE
- 4- Allergic broncho pulmonary aspergillosis
- 5- Takayasu's arteritis

#### Answer & Comments

Answer: 2- Churg Strauss syndrome

The combination of mononeuritis multiplex, asthma, eosinophilia.

The American College of Rheumatology (ACR) has proposed 6 criteria for diagnosis of Churg Strauss syndrome. The presence of 4 or more criteria yields a sensitivity of 85% and a specificity of 99.7%.

These criteria are

- (1) asthma (w heezing, expiratory rhonchi)
- (2) eosinophilia of more than 10% in peripheral blood
- (3) paranasal sinusitis
- (4) pulmonary infiltrates (may be transient)
- (5) histological proof of vasculitis with extravascular eosinophils
- (6) mononeuritis multiplex or polyneuropathy



Vasculitic rash on the skin of a patient with Churg Strauss syndrome



#### [ Q: 156 ] MRCPass - Rheumatology

A 40 year old man has generalised joint pains and stiffness, particularly in the knees. He also has sore, dry eyes and difficulty tolerating contact lenses. On examination there are no joint swellings or effusions. His ESR is 80 mm/hour, Rheumatoid Factor positive with a titre of 1/1024.

*Which of the following is likely?*

- 1- Positive antibodies to Ro and La antigens
- 2- Positive anti SCL-70 antibody
- 3- Positive anti mitochondrial antibodies
- 4- Positive anti-Sm antibodies
- 5- Positive ANCA

#### Answer & Comments

Answer: 1- Positive antibodies to Ro and La antigens

Ro is also known as anti ssA and La is known as anti ssB antibody, both are diagnostic tests for Sjogrens. The history of dry eyes (keratoconjunctivitis sicca) and joint pains with strongly positive RhF goes with Sjogrens.



#### [ Q: 157 ] MRCPass - Rheumatology

A 45 year old man has recurrent

sinusitis and haemoptysis. He also has haematuria and mild renal impairment.

Tests are sent for suspected Wegener's granulomatosis.

*Which one of the following tests has greatest specificity for Wegener's granulomatosis?*

- 1- Anti glomerular basement antibody
- 2- pANCA positive antibodies proteinase 3
- 3- pANCA positive antibodies myeloperoxidase
- 4- cANCA positive antibodies proteinase 3
- 5- cANCA positive antibodies myeloperoxidase

#### Answer & Comments

Answer: 4- CANCA positive antibodies proteinase 3

On immunofluorescence, if ANCA are present, the staining pattern may be cytoplasmic (cANCA) or perinuclear (pANCA). Typical antigen specificity includes cANCA proteinase 3 which is more common in Wegener's granulomatosis. pANCA myeloperoxidase is more common in polyarteritis nodosa.



#### [ Q: 158 ] MRCPass - Rheumatology

A lady with whiplash injury 5 years ago presents with pains in the neck and shoulder. They were not relieved by 12 co-codamols a day.

*What should be done next?*

- 1- Amitriptyline
- 2- NSAIDs
- 3- Physiotherapy
- 4- Morphine
- 5- Gabapentin

#### Answer & Comments

Answer: 3- Physiotherapy

Whiplash injuries and radiculopathies causing back pains can be difficult to treat with

medications. Physiotherapy has an important role for symptom relief in combination with analgesia.



#### [ Q: 159 ] MRCPass - Rheumatology

A 45 year old man presents with a week history of a painful right leg. He has had previous episodes of erythema nodosum, recurrent oral and scrotal ulceration. Examination reveals a diffusely swollen left leg.

*What is the likely cause of his swollen leg?*

- 1- Baker's cyst
- 2- Gonococcal arthritis
- 3- Reactive arthritis
- 4- Deep vein thrombosis
- 5- Cellulitis

#### Answer & Comments

Answer: 4- Deep vein thrombosis

The overall diagnosis is Behcet's syndrome. There is a thrombotic tendency, hence the likely cause of a DVT.



#### [ Q: 160 ] MRCPass - Rheumatology

A 45 year old woman presents with pain in the wrist. The pain is centred over the radial styloid and is increased by abduction of the thumb against resistance.

*What is the most likely diagnosis?*

- 1- Carpal tunnel syndrome
- 2- Rheumatoid arthritis
- 3- De Quervain's tenosynovitis
- 4- Osteoarthritis
- 5- Adductor pollicis synovitis

#### Answer & Comments

Answer: 3- De Quervain's tenosynovitis

The pain in the thumb on resisted abduction is typical of De Quervain's.

De Quervain's disease occurs more frequently in women. The age group usually affected is 30 to 50 year olds.

The history often is of unaccustomed or excessive activity such as rose pruning. The patient complains of pain on the radial side of the wrist. Abduction of the thumb against resistance is painful. Finkelstein's test is positive. This is performed with the thumb flexed across the palm of the hand, asking the patient to move the wrist into flexion and ulnar deviation.

This stresses the tendons of abductor pollicis longus and extensor pollicis brevis and reproduces the pain of de Quervain's tenosynovitis.



Finkelstein's test



[ Q: 161 ] MRCPass - Rheumatology

A 43 year rheumatoid arthritis was investigated routinely and had the following results:

Haemoglobin 11.2 g/dL

Platelets  $385 \times 10^9/L$

White Cell Count  $8.2 \times 10^9 /L$

MCV 110 fL

*Which drug is she likely to have been on?*

1- Aspirin

2- Rituximab

3- Methotrexate

4- Vincristine

5- Hydroxychloroquine

Answer & Comments

Answer: 3- Methotrexate

Methotrexate is associated with bone marrow suppression, and can lead to pancytopenia or a megaloblastic anaemia, especially if folate treatment is not given as well.



[ Q: 162 ] MRCPass - Rheumatology

A 75 year old woman has recently been commenced on alendronate for osteoporosis.

*What is the mechanism of action of alendronate?*

1- Increases osteoblast activity

2- Inhibits osteoclast activity

3- Increases vitamin D absorption

4- Causes hypercalcaemia

5- Increases the action of oestrogen on bone

Answer & Comments

Answer: 2- Inhibits osteoclast activity

Alendronate is a bisphosphonate which can increase bone mineralisation by inhibiting osteoclastic activity.



[ Q: 163 ] MRCPass - Rheumatology

An 75 year old man presents with bilaterally painful knees. He has bilateral reduced knee movements and crepitus. X ray shows sclerosis, osteophytes and loss of joint space.

*Which one of the following is the most appropriate initial treatment?*

1- Ibuprofen

2- Ibuprofen and lansoprazole

3- Paracetamol

4- Codeine phosphate

5- Celecoxib

**Answer & Comments****Answer:** 3- Paracetamol

The principle goal of systemic therapy in osteoarthritis is to provide effective pain relief with least associated toxicity. Paracetamol is the recommended initial therapy, especially in the elderly due to possible gastrointestinal upset.

**[ Q: 164 ] MRCPass - Rheumatology**

A 35 year old woman recently arrived in the UK from Ghana. She complains of neck pain with pins and needles affecting the right arm associated with a weak grip.

Examination reveals tenderness over the cervical spine. X rays of the cervical spine show narrowing of the C3/4 and C4/5 joint space and partial collapse of C4.

Investigations show :

Hb 9.5 g/dl

WCC 11.1

platelets 520

ESR 120 mm in the first hour

CRP 250 g/l

Calcium 2.21 micromol/l

Albumin 32 g/l

alkaline phosphatase 210 units/l

phosphate 0.8 micromol/l.

**What is the most likely diagnosis?**

1- Potts disease

2- Osteoporosis

3- Multiple myeloma

4- Ankylosing spondylitis

5- Syringomyelia

**Answer & Comments****Answer:** 1- Potts disease

Pott's disease is tuberculous infection of the spine with associated collapse of the vertebral body. The infection spreads from two adjacent vertebrae into the adjoining disc space. If only one vertebra is affected, the disc is normal, but if two are involved the intervertebral disc, which is avascular, collapses.

Signs and symptoms include: Localised back pain, Paravertebral swelling, Neurological signs including paraplegia.

Drug treatment (antituberculous drugs) is generally sufficient for Pott's disease, with spinal immobilisation if required. Surgery is required if there is spinal deformity or neurological signs of spinal cord compression.



Potts disease on an MRI

**[ Q: 165 ] MRCPass - Rheumatology**

A 35 year old woman presents with

tight skin over her hands with Raynaud's phenomenon. She has ulceration of the fingertips and associated small white deposits. She has noted increasing breathlessness over the past few years. Renal function is mildly impaired.

*What is the likely diagnosis?*

- 1- SLE
- 2- Ataxia telangiectasia
- 3- Polymyositis
- 4- Limited cutaneous scleroderma
- 5- Diffuse cutaneous scleroderma

#### Answer & Comments

Answer: 4- Limited cutaneous scleroderma

Limited cutaneous scleroderma is also known as CREST syndrome (calcinosis, Raynaud's, (o)esophageal dysfunction, sclerodactyly, and telangiectasia). 'Limited' refers to the extent of skin involvement limited to the forearms and face. They generally develop pulmonary hypertension rather than pulmonary fibrosis, leading towards breathlessness.



Tight thickened skin (sclerodactyly) seen in Scleroderma



#### [ Q: 166 ] MRCPass - Rheumatology

A 70 year old woman complains of pain at the base of her right thumb. There is tenderness and swelling of right first carpometacarpal joint.

*What is the likely diagnosis?*

- 1- De Quervain's tenosynovitis
- 2- Rheumatoid nodule
- 3- Osteoarthritis
- 4- Psoriatic arthropathy
- 5- Reiter's syndrome

#### Answer & Comments

Answer: 3- Osteoarthritis

Osteoarthritis of the 1st carpometacarpal joint is common. Swelling is usually bony hard due to osteophyte formation. PIP joint nodes are known as Bouchard's and DIP joint nodes are known as Heberden's nodes.



#### [ Q: 167 ] MRCPass - Rheumatology

A 70 year old patient has a set of investigations due to lethargy. She complains of polyuria and generalised back pains. Upon investigation, she has the following results:

Hb 8 g/dl

MCV 100 fl

Platelets  $190 \times 10^9/L$

total protein 90 g/l (60-76) gm%

Albumin 35 (37-49) g/l

calcium 2.9 (2.25-2.7) mmol/l

phosphate 0.75 (0.8-8) pmol/l

*What is the appropriate next investigation?*

- 1- Complete liver function tests
- 2- Urinary albumin



- 3- Plasma electrophoresis
- 4- 24 hour urine protein
- 5- Uric acid

#### Answer & Comments

**Answer:** 3- Plasma electrophoresis

The patient has multiple myeloma as indicated by hypercalcaemia, polyuria and bone pains.



#### [ Q: 168 ] MRCPass - Rheumatology

A 72 year old lady has severe pain in the left knee and right hand. An X ray of the hand shows osteophytes and an X ray of the knee was normal. On examination, she has limited left hip flexion.

*What should be the next investigation for the knee?*

- 1- MRI of the knee
- 2- Bone scan
- 3- Arthroscopy of the knee
- 4- CT scan of the knee
- 5- Ultrasound of the knee

#### Answer & Comments

**Answer:** 1- MRI of the knee

The patient's presentation suggests osteoarthritis, but an MRI would be helpful to exclude other pathology as well as confirm osteoarthritis in the context of a normal knee X ray. The MRI is useful for assessing the state of the cruciate ligaments and the joint cartilage as well as avascular necrosis. Arthroscopy is helpful but invasive in this instance.



#### [ Q: 169 ] MRCPass - Rheumatology

A 28 year old patient with systemic lupus erythematosus attends the obstetric clinic at 25 weeks into her pregnancy. The foetal heart rate is 45 beats per minute. Foetal

echocardiography shows complete heart block.

*Which one of the following maternal autoantibodies is likely to be present?*

- 1- Anti Ro (SSA)
- 2- Anti dsDNA
- 3- Anti La (SSB)
- 4- Anti Jo 1
- 5- Anti centromere

#### Answer & Comments

**Answer:** 1- Anti Ro (SSA)

AntiRo antibody is associated with congenital complete heart block. When congenital complete heart block occurs, SS-A antibodies are almost always present in maternal and fetal serum (maternal anti-Ro(SS-A) antibody crosses the placenta).



#### [ Q: 170 ] MRCPass - Rheumatology

A 34 year old lady with systemic sclerosis complained of lethargy. Her blood pressure was 185/90 mmHg.

Fundoscopy showed cotton wool spots.

Investigations showed that her U+Es were:

sodium 135 mmol/l  
potassium 4.5 mmol/l  
urea 12 mmol/l  
creatinine 225 µmol/l

*What is the treatment of choice for this patient?*

- 1- Oral Captopril
- 2- IV Prostacyclin
- 3- IV Labetalol
- 4- IV Sodium nitroprusside
- 5- Oral Atenolol

## Answer &amp; Comments

**Answer:** 1- Oral Captopril

A major complication of scleroderma is renal crisis. This is characterised by abrupt onset of severe hypertension, usually retinopathy, together with rapid deterioration of renal function and heart failure.

Hypertension should be treated with an ACE inhibitor. This is because the underlying pathology causing hypertension is angiotensin II-induced vasoconstriction, and trials have shown ACE -inhibitors to have the best antihypertensive efficacy and improved survival.

The aim is to reduce pressure gradually, as an abrupt fall can lead to cerebral ischemia /infarctions (as in any accelerated hypertension), and may cause decreased renal perfusion as well as acute tubular necrosis. Calcium channel blockers may be added to ACE inhibitors. Parenteral antihypertensive agents (such as intravenous nitroprusside or labetalol) should be avoided as they cause abrupt blood pressure drops.



## [ Q: 171 ] MRCPass - Rheumatology

A 45 year woman presents with an 8 month history of joint pains and stiffness of the hands and feet.

Examination reveals a synovitis of the distal interphalangeal joints, left index finger, right wrist and ankle joints.

Nail pitting was noticed. Her ESR was 20 mm/hr.

*Which one of following conditions is associated with the pattern of joint involvement?*

- 1- SLE
- 2- Psoriasis
- 3- Rheumatoid arthritis
- 4- Septic arthritis
- 5- Reactive arthritis

## Answer &amp; Comments

**Answer:** 2- Psoriasis

The diagnosis is psoriatic arthritis. Psoriatic arthritis is subclassified according to different patterns of arthritis: asymmetrical oligoarthritis, symmetric polyarthritis, spondyloarthropathy and arthritis mutilans. In about 20% of patients there is a chronic, progressive, deforming arthropathy in an asymmetrical pattern, including distal interphalangeal joint involvement.



Psoriatic Arthropathy - note onycholysis on the nails



## [ Q: 172 ] MRCPass - Rheumatology

A 16 year old girl presents with widespread palpable purpura over legs and buttocks. She has abdominal pains and is noted to have blood and protein on urine dipstick.

*What is the most likely diagnosis?*

- 1- Juvenile dermatomyositis
- 2- Juvenile chronic arthritis
- 3- Henoch Schönlein purpura
- 4- Rheumatoid arthritis
- 5- HUS-TTP

## Answer &amp; Comments

**Answer:** 3- Henoch Schönlein purpura

Henoch-Schönlein purpura (HSP) is a systemic vasculitis mostly seen in children. It is a multisystem disorder involving the skin, joints, gastrointestinal and renal tracts.



Aetiology is unknown, but the syndrome is often preceded by infections such as Group A beta hemolytic streptococcal respiratory tract infection, *Campylobacter jejuni*, *Mycoplasma pneumoniae* and viruses such as varicella, hepatitis B, Epstein-Barr virus, and parvovirus B19.

Pathology is due to intravascular deposition of IgA immune complexes with activation of complement and leucocyte infiltration. Patients often present with a purpuric rash usually involving the buttocks and lower limbs, arthralgia and joint swelling, severe colicky abdominal pain and tenderness caused by vasculitis-induced thrombosis in the gut.

Renal involvement commonly presents as microscopic haematuria and proteinuria. The most serious long-term



complication from HSP is progressive renal failure.



#### [ Q: 173 ] MRCPass - Rheumatology

A 45 year old man has difficulty bending touching his toes when bending over. He has lower back pain, stiffness in the thoracic region and reduced chest expansion. His lower spine X-ray is shown above. He has negative rheumatoid factor, and a HLA-B27 genotype.

*What is the diagnosis?*

- 1- Paget's disease
- 2- Osteoarthritis
- 3- Marble bone disease
- 4- Marfan's syndrome

#### 5- Ankylosing spondylitis

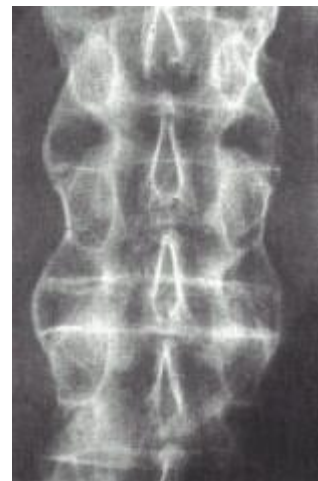
##### Answer & Comments

Answer: 5- Ankylosing spondylitis

Ankylosing spondylitis is a seronegative arthropathy associated with HLAB27 genotype. It leads to increased stiffness and fusion of the vertebrae causing a bamboo spine. Typically, the sacroiliac joints and hip joints are affected, but thoracic and cervical spines are eventually affected as well.

There is a list of associations mostly starting with A. These are anterior uveitis/iritis, aortic regurgitation, aortic aneurysm, apical fibrosis, aspergillus infection, amyloidosis and archilles tendinitis.

In bamboo spine, there is fusion of the vertebral bodies and squaring of the vertebrae. One also expects syndesmophytes (thin vertical dense spicules bridging the vertebral bodies), Romano lesions (erosion at the corner of vertebral bodies) and enthesopathy (ligament or tendon calcification).



Bamboo Spine



#### [ Q: 174 ] MRCPass - Rheumatology

A 35 year old woman presents with red scaly plaques on her cheeks and her forehead. On closer examination, there was

plugging of some hair follicles and atrophy of the skin.

*What is the likely diagnosis?*

- 1- Drug induced lupus
- 2- Psoriasis
- 3- Discoid lupus
- 4- Sarcoidosis
- 5- Lupus pernio

#### Answer & Comments

**Answer:** 3- Discoid lupus

The diagnosis is discoid lupus erythematosus. Lesions are discrete plaques, often erythematous, scaly, with extension into hair follicles. These lesions can occur on the face, scalp, in the pinnae, behind the ears or on the neck. There can also be active indurated erythema and central atrophic scarring.



Discoid lupus



#### [ Q: 175 ] MRCPass - Rheumatology

A 50 year old patient with active rheumatoid arthritis has failed treatment with gold, methotrexate, hydroxychloroquine and sulphasalazine. She has ongoing joint pains and erosive damage.

*What is the most appropriate treatment ?*

- 1- High dose prednisolone
- 2- COX2 inhibitors
- 3- Infliximab
- 4- Ciclosporin
- 5- Azathioprine

#### Answer & Comments

**Answer:** 3- Infliximab

The Anti-TNF drugs are infliximab and adalimumab. The criteria for treatment with these drugs are that patients who have been treated with at least two DMARDs (disease-modifying drugs) continue to have active rheumatoid arthritis.

Examples of the DMARDs are: gold injections, sulphasalazine, hydroxychloroquine, leflunomide, cyclosporin, azathioprine and methotrexate [One of the two must be methotrexate].



#### [ Q: 176 ] MRCPass - Rheumatology

A 45 year old woman presents with a year's history of Raynaud's phenomenon, dyspepsia and joint pains. On examination, she has sclerodactyly and synovitis of small joints of her hands. Her ESR is 60 mm/hr (<10) but Rheumatoid factor and Antinuclear Antibody are both negative.

*What other clinical feature is likely in this patient?*

- 1- Splinter haemorrhages
- 2- Erythema marginatum
- 3- Butterfly rash
- 4- Anterior uveitis
- 5- Small bowel hypomotility

#### Answer & Comments

**Answer:** 5- Small bowel hypomotility

This woman features of a mixed connective tissue disorder such as CREST/systemic sclerosis, sclerodactyly, Raynaud's, dyspepsia and arthralgia. The other likely development would be malabsorption which is associated with hypomotility of the small bowel.



## [ Q: 177 ] MRCPass - Rheumatology

A 60 year old man is on treatment for chronic heart failure with diuretics. He has previous history of asthma. He presents with sudden onset of pain and swelling of the metatarso-phalangeal joint of his right big toe. Aspiration of the joint demonstrates crystals of monosodium urate.

*What is the recommended treatment?*

- 1- Aspirin
- 2- Colchicine
- 3- Non-steroidal anti-inflammatory drugs
- 4- Cyclooxygenase 2 inhibitor
- 5- Allopurinol

## Answer &amp; Comments

Answer: 2- Colchicine

In this particular patient, colchicine is the best option. In acute gout, either colchicine or NSAIDs can be used. However, asthma contraindicates NSAIDs.



## [ Q: 178 ] MRCPass - Rheumatology

A 35 year old man is renovating his apartment when he slams a door against his foot. He develops swelling, erythema and pain in all the digits of his foot. He has an ESR of 20mm/hour and a temperature of 36°C.

*What is the likely diagnosis?*

- 1- Porphyria
- 2- Cellulitis
- 3- Gout
- 4- Raynaud's phenomenon
- 5- Reflex sympathetic dystrophy

## Answer &amp; Comments

Answer: 5- Reflex sympathetic dystrophy

Reflex sympathetic dystrophy occurs following trauma to an injured part of the body, and can

progress to other parts. It is due to autonomic nervous system dysfunction. Symptoms of extreme pain and burning can occur. Analgesics are often unhelpful.



Flushing, shiny and atrophied skin on the left leg indicating reflex sympathetic dystrophy



## [ Q: 179 ] MRCPass - Rheumatology

A 42 year old lady has tightening of the skin around her hands and mouth. She has several telangiectasia on her hands, and complains of severe cold hands in winter. She was noticed to be pale.

Investigations show :

Hb 4.5 g/dl

MCV 105 fl

WCC  $6 \times 10^9/L$

platelets  $230 \times 10^9/L$

Iron 22 (14-29)  $\mu\text{mol/l}$

Ferritin 155 (15-200)  $\mu\text{mol/l}$

total iron binding capacity 50 (45-72)  $\mu\text{mol/l}$

Folate 11 (3-20)  $\mu\text{g/l}$

Vitamin B<sub>12</sub> - 85 (120-700)  $\text{pmol/l}$

*What is the likely cause of anaemia?*

- 1- Pernicious anaemia
- 2- Secondary folate deficiency
- 3- Celiac disease

4- Methotrexate

5- Bacterial overgrowth

#### Answer & Comments

Answer: 5- Bacterial overgrowth

Scleroderma can cause folate deficiency due to malabsorption. However, in this case, the folate levels are normal and there is B12 deficiency.

B12 deficiency can occur in conditions where there is bacteria overgrowth in the small intestine (blind loop syndromes) such as jejunal diverticulosis, Crohns disease, fistulas and scleroderma. The anaerobic organisms metabolise vitamin B<sub>12</sub> and impair absorption. When systemic sclerosis (SSc) involves the small intestine, normal peristaltic movements are lost and motility is impaired leading to stasis and dilatation.



#### [ Q: 180 ] MRCPass - Rheumatology

A 55 year old man develops sudden onset severe pain in his right big toe.

On examination he has swelling of the metacarpophalangeal joint of his right hallux. The surround skin is erythematous. It is tender to touch. Initial investigations reveal a raised white cell, count and an elevated CRP.

*What should be done to confirm the diagnosis?*

- 1- MRI of the toe
- 2- Serum uric acid
- 3- Serum rheumatoid
- 4- Joint fluid aspirate for microscopy
- 5- Serum pyrophosphate levels

#### Answer & Comments

Answer: 4- Joint fluid aspirate for microscopy

The likely diagnosis is acute gout. The serum inflammatory markers are raised, but uric acid levels may be normal.

Joint fluid aspirate best test. Polarised light microscopy shows strongly birefringent (negative sign) needle-shaped crystals.



Acute Gout involving the left foot



#### [ Q: 181 ] MRCPass - Rheumatology

A 80 year old man developed acute monoarthritis of his right ankle following an admission with congestive cardiac failure. He mentioned that he had ankle oedema and had recently been prescribed frusemide by the GP.

*What is the likely diagnosis?*

- 1- Rheumatoid arthritis
- 2- Gout
- 3- Pseudogout
- 4- Osteoarthritis
- 5- Septic arthritis

#### Answer & Comments

Answer: 2- Gout

Gout can be precipitated by diuretics, e.g. frusemide.



#### [ Q: 182 ] MRCPass - Rheumatology

A 45 year old has a past history of systemic sclerosis. She now has headaches and blurred vision. On examination, she has a blood pressure of 220/100 mmHg and there is evidence of bilateral papilloedema.

*Which of the following medications should be prescribed?*

- 1- Oral hydrochlorothiazide
- 2- Oral Lisinopril
- 3- Sublingual Nimodipine
- 4- IV Sodium Nitroprusside
- 5- IV Labetolol

#### Answer & Comments

**Answer:** 2- Oral Lisinopril

A major complication of scleroderma is renal crisis which is characterised by abrupt onset of severe hypertension. The hypertension almost always is severe with a diastolic BP over 100 mmHg in 90% of patients. There is associated hypertensive retinopathy in about 85% of patients. ACE inhibitors are first line, with an aim to reduce the blood pressure gradually.



#### [ Q: 183 ] MRCPass - Rheumatology

A 50 year old man presents an acute monoarthritis of left knee. Gout is confirmed following joint aspiration and examination of fluid under polarised light microscopy. He had also underwent endoscopy 3 weeks earlier because of indigestion this confirmed a duodenal ulcer.

*Which one of the following is the best treatment for the patient?*

- 1- Allopurinol
- 2- Intraarticular corticosteroid injection
- 3- Indomethacin and Lansoprazole
- 4- Celecoxib and Lansoprazole
- 5- Indomethacin and Misoprostol

#### Answer & Comments

**Answer:** 2- Intraarticular corticosteroid injection

All non-steroidals including Cox II selective inhibitors are relatively contraindicated in the presence of active ulceration. In a large joint

such as the knee, the safest option would be inject corticosteroid into the joint.



#### [ Q: 184 ] MRCPass - Rheumatology

A 62 year old man has a 5 week history of pain and swelling affecting left knee, both ankles and his right wrist.

He has lost 6 kg in weight.

His investigations show :

WCC  $14.1 \times 10^9/L$

Hb  $10.3 \times 10^9/L$

MCV 72 fl

plt  $510 \times 10^9/L$

ESR 63 mm in the first hour

CRP 21 g/l

CK 120 iu

Rh F 1/80

ANA negative

ENA negative

XR of hands and feet normal.

*What is the most likely diagnosis?*

- 1- Paraneoplastic syndrome
- 2- Osteoarthritis
- 3- Polymyositis
- 4- Scleroderma
- 5- Behcet's syndrome

#### Answer & Comments

**Answer:** 1- Paraneoplastic syndrome

The CK is not significantly raised. Weight loss and anaemia suggest underlying malignancy. Paraneoplastic syndrome can present with an asymmetrical arthralgia which more commonly affects the lower limbs. False positive rheumatoid factor can occur but should be of low titre.



#### [ Q: 185 ] MRCPass - Rheumatology



A 45 year old lady has had long standing arthritis of her hands. Her hand X-rays done.

*Which of the following X ray changes suggests rheumatoid arthritis instead of a seronegative arthropathy?*

- 1- Osteosclerosis
- 2- Osteophytes
- 3- Osteoporotic changes
- 4- Periarticular erosions
- 5- Loss of joint space

#### Answer & Comments

Answer: 4- Periarticular erosions

Osteophytes and loss of joint space are commonly found in osteoarthritis, although they can also be found in rheumatoid arthritis. Periarticular erosions are most suggestive of rheumatoid arthritis.



Periarticular erosions



#### [ Q: 186 ] MRCPass - Rheumatology

A 76 year old woman presents with weakness of his hand. On examination there was tenderness, crepitus and bony swellings over the base of the first metacarpal and wasting of the right thenar eminence.

Investigations reveal an ESR of 25 mm/1st hr, a CRP of 10mg/L, a Urate concentration of 0.42 (0.19-0.36). Her Rheumatoid factor was

60 IU/L (<30). An xray of the right hand showed a loss of joint space, periarticular sclerosis and osteophytes of the first carpometacarpal joint.

*What is the likely diagnosis?*

- 1- Osteoarthritis
- 2- DeQuervain's tenosynovitis
- 3- Pseudogout
- 4- Gout
- 5- Rheumatoid arthritis

#### Answer & Comments

Answer: 1- Osteoarthritis

The patient has clinical and radiological features consistent with osteoarthritis (OA) of the 1st right carpometacarpal (CMC) joint. The condition is characterised by joint pain, crepitus and stiffness after movement. Joint swellings are bony in nature (Bouchard's and Heberden's nodes), unlike boggy swellings which occurs in inflammatory arthritis. This patient's inflammatory markers are mildly raised only, making an inflammatory arthritis unlikely.



#### [ Q: 187 ] MRCPass - Rheumatology

A 70 year old man presents with severe back pains. An His total serum protein is 85 g/l with an albumin of 41 g/l.

A chest X ray shows several lucencies in vertebral bodies. A sternal bone marrow aspirate obtains a dark red jellylike material in the syringe.

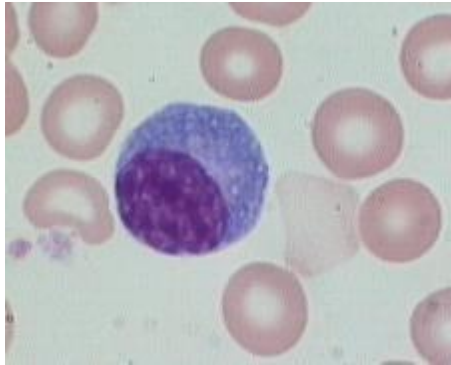
*The smear of aspirate is likely to show which prominent features?*

- 1- Macrophages
- 2- Osteoblasts
- 3- Plasma cells
- 4- Pneumocytes
- 5- Osteosarcoma

## Answer &amp; Comments

**Answer:** 3- Plasma cells

The diagnosis is multiple myeloma. The bone marrow needle is likely to be in a lytic lesion filled with plasma cells. His serum globulins are high from the monoclonal gammopathy.



A plasma cell



## [ Q: 188 ] MRCPass - Rheumatology

A 75 year old man presents with bilateral hip pains. Investigations reveal:

Corrected calcium 2.5 (2.2 - 2.6) mmol/l

ESR 22 mm/1st hr

Alkaline phosphatase 800 iu/L (50 - 100)

gammaGT 22 iu/L

*What is the likely diagnosis?*

- 1- Osteoporosis
- 2- Osteomalacia
- 3- Paget's disease of the pelvis
- 4- Polymyalgia rheumatica
- 5- Multiple myeloma

## Answer &amp; Comments

**Answer:** 3- Paget's disease of the pelvis

This elderly patient presenting with bone pains has significantly elevated alkaline phosphatase but normal calcium concentrations suggesting a diagnosis of Paget's.



## [ Q: 189 ] MRCPass - Rheumatology

A 25 year old Turkish man was noted by ophthalmologists to have a posterior uveitis requiring high dose immunosuppression. He has a history of recurrent mouth ulcers and painful ulcers on the scrotum.

*What is the likely diagnosis?*

- 1- Behcet's syndrome
- 2- Reiter's syndrome
- 3- Ankylosing spondylitis
- 4- Takayasu's arteritis
- 5- Giant cell arteritis

## Answer &amp; Comments

**Answer:** 1- Behcet's syndrome

Behcet's syndrome is classically characterized as a triad of symptoms that include recurring crops of mouth ulcers (called aphthous ulcers), genital ulcers, and uveitis. The ulcers are usually painful. The disease is more frequent and severe in patients from the Eastern Mediterranean and Asia than those of European descent.

Eye manifestations may result in blindness. In addition, iritis, retinal vessel occlusions and optic neuritis can be found. Hypopyon uveitis (pus in the anterior chamber of the eye), which is considered the hallmark of Behçet's disease, is in fact a rare manifestation. The arthritis of Behçet's disease is usually intermittent, self-limited, not deforming and localized to the knees and ankles.



Oral ulceration in Behcet's disease





## [ Q: 190 ] MRCPass - Rheumatology

A 70 year old woman has polydipsia and polyuria for 3 months. She also complains of loin pains. She has not been on any medication.

Investigations reveal:

serum urea 6 (2.5-7.5)  $\mu\text{mol/l}$

serum creatinine 80 (60-110)  $\mu\text{mol/l}$

serum albumin 38 g/L (37-49)

serum total calcium 3.1 (2.2-2.6)

*What is the likely cause of the hypercalcaemia?*

- 1- Multiple myeloma
- 2- Sarcoidosis
- 3- Paget's disease
- 4- Primary hyperparathyroidism
- 5- Vitamin D toxicity

## Answer &amp; Comments

Answer: 4- Primary hyperparathyroidism

Primary hyperparathyroidism is caused by an overproduction of PTH.

Excess PTH results in an increase in bone breakdown by means of osteoclastic resorption with subsequent fibrous replacement and reactive osteoblastic activity. Historically, in classic primary hyperparathyroidism, nephrolithiasis was noted in 50% of patients, and it was the most common clinical presentation of the disease. Additional manifestations of primary hyperparathyroidism include pancreatitis, peptic ulcer disease, and cardiovascular abnormalities.



## [ Q: 191 ] MRCPass - Rheumatology

A 42 year old lady presents with backache. Her blood results are as follow s:

Hb 11 g/dL

Ca 1.9 mmol/L

Phosphate 0.8 mmol/L

Alkaline phosphatase 220 U/L

Albumin 38 g/L

Urea 7 mmol/L

Sodium 142 mmol/L

Potassium 3.9 mmol/L

*What is the diagnosis?*

- 1- Osteoporosis
- 2- Paget's disease
- 3- Osteomalacia
- 4- X linked hypophosphataemic rickets
- 5- Hypoparathyroidism

## Answer &amp; Comments

Answer: 3- Osteomalacia

The patient has osteomalacia with secondary hyperparathyroidism causing low phosphate levels. Osteomalacia is due to vitamin D deficiency which could be due to malabsorption or dietary deficiency, or renal/liver disease.



## [ Q: 192 ] MRCPass - Rheumatology

A 32 year old woman has a deep vein thrombosis. Her previous history included investigations for miscarriages.

Investigations revealed: Haemoglobin 11.9 g/dL, White cell count  $4 \times 10^9/\text{L}$ , Platelet count  $30 \times 10^9/\text{L}$ .

*Which of these are likely to be abnormal?*

- 1- Homocysteine level
- 2- ANCA
- 3- Protein C
- 4- Antiphospholipid antibody
- 5- Coomb's test

## Answer &amp; Comments

Answer: 4- Antiphospholipid antibody

Antiphospholipid syndrome leads to venous and arterial thrombosis, livedo reticularis, splinter hemorrhages, leg ulcer, multi-infarct dementia, chorea, Thrombocytopenia (40% of patients), hemolytic anemia and late term miscarriages.



[ Q: 193 ] MRCPass - Rheumatology

A 35 year old man presents with acute stiffness swelling of his knees and ankles, a painful rash on his legs. The ESR was 100 mm/hour. Chest Xray showed hilar lymphadenopathy bilaterally.

*What is the likely progression of the arthralgia?*

- 1- Chronic arthritis
- 2- Septic arthritis
- 3- Improvement only with steroids
- 4- Spontaneous improvement
- 5- Permanent joint destruction

Answer & Comments

Answer: 4- Spontaneous improvement

The description typical of acute sarcoidosis - erythema nodosum, oligoarthropathy and hilar lymphadenopathy. This usually has a good prognosis, with resolution over 6-8 weeks.



[ Q: 194 ] MRCPass - Rheumatology

A 75 year old lady presents with back pains. Lateral spine X-rays and pelvic x-rays show osteopenia. A serum corrected calcium is 1.8 mmol/l and phosphate is 0.6 mmol/l. Alkaline phosphatase is 360 U/l.

*Which diagnosis is most likely?*

- 1- Myeloma
- 2- Osteoporosis
- 3- Osteomalacia
- 4- Paget's disease

- 5- Ankylosing spondylitis

Answer & Comments

Answer: 3- Osteomalacia

Osteomalacia is more likely than osteoporosis due to the low calcium, low phosphate and raised alkaline phosphatase. The condition is caused by low vitamin D levels.

Alkaline phosphatase is raised when there is increased osteoblastic activity, conditions it may be raised in:

- Paget's disease
- osteomalacia and rickets
- renal osteodystrophy
- bone metastases



[ Q: 195 ] MRCPass - Rheumatology

A 22 year old lady has a swinging fever, half a stone weight loss over 2 months, generalised myalgia, polyarthralgia affecting wrists, knees, ankles, elbows metacarpophalangeal joints and a sore throat.

Investigations show : Hb 9.5g/l, MCV 85 fl, ESR 92 mm in first hour, CRP 45 g/l, serum ferritin 1600 mg/dl, RF negative, ANA negative, ENA negative, ASO titre <200iu.

*What is the likely diagnosis?*

- 1- Rheumatoid arthritis
- 2- Ankylosing spondylitis
- 3- Adult onset Still's disease
- 4- Inclusion body myositis
- 5- Polymyositis

Answer & Comments

Answer: 3- Adult onset Still's disease

Adult Onset Still's Disease (AOSD) is an acute febrile illness in young adults. It usually affects multiple organs, but is a diagnosis of exclusion.

Clinical features include a high fever, arthralgia and arthritis, pharyngitis, typical rash (evanescent salmon-colored, macular or maculopapular eruption), lymphadenopathy, and serositis. Chronic arthritis and constitutional symptoms are common.

The triad of fever, rash, and arthralgia are often absent during the first month of the illness. The usual joints affected are wrists, knees, and ankles in descending order.

Two thirds of cases experience polyarticular arthritis and one third have monoarticular symptoms.

Approximately 1/3 of patients have chronic persistent disease with progressive joint damage.



[ Q: 196 ] MRCPass - Rheumatology

A 65 year old woman has a swollen, erythematous knee joint. Aspiration of the joint was performed. Microscopy showed positively birefringent crystals.

*What are the crystals composed of?*

- 1- Calcium carbonate
- 2- Magnesium sulphate
- 3- Urate
- 4- Calcium pyrophosphate
- 5- Aminolaevulinic acid

Answer & Comments

Answer: 4- Calcium pyrophosphate

Pseudogout is caused by the deposition of calcium pyrophosphate deposition rather than the deposition of uric acid derivatives that cause gout. Also, in pseudogout, synovial fluid samples obtained with aspiration have positive birefringence. This finding is in direct contrast to the negative birefringence in gout.



[ Q: 197 ] MRCPass - Rheumatology

A 45 year old woman presents with claudication in her lower limbs. She is noted to have absent left arm pulses.

The previous year she had a small hemispheric cerebrovascular infarct.

*What is the likely diagnosis?*

- 1- Giant cell arteritis
- 2- Takayasu's arteritis
- 3- Familial hypercholesterolaemia
- 4- Coarctation of the aorta
- 5- Anti phospholipid syndrome

Answer & Comments

Answer: 2- Takayasu's arteritis

Takayasu's arteritis is a large vessel vasculitis of unknown origin. The vasculitic process involves structures such as the aorta, great vessels, the sclera and the cardiac conduction tissues.

Women are affected more than men, usually in the second and third decades of life. Presentation is often with symptoms such as fever, weight loss, night sweats and arthralgias. Symptoms related to ischaemia may include ischaemic stroke, visual disturbances and claudication.



[ Q: 198 ] MRCPass - Rheumatology

A 70 year old man develops weakness of the shoulders and around the hips over a 6 month period. He has also noticed weak finger flexors. He complained of difficulty swallowing liquids. There is no other significant past medical history. He smokes 15 cigarettes a day and drinks a bottle of wine at the weekend. A creatinine kinase level comes back at 120 U/l.

A muscle biopsy sample shows myopathic changes. There are also inflammatory

infiltrates and intracytoplasmic vacuoles present.

*What is the likely diagnosis?*

- 1- Polymyositis
- 2- Fibromyalgia
- 3- Polymyalgia rheumatica
- 4- Dermatomyositis
- 5- Inclusion body myositis

#### Answer & Comments

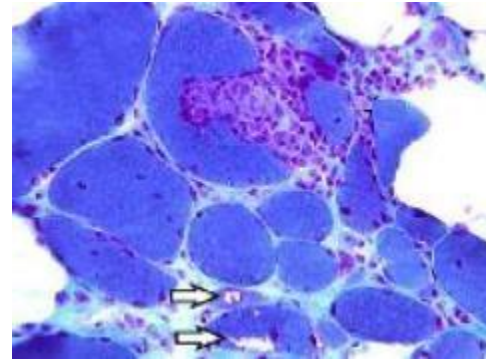
**Answer:** 5- Inclusion body myositis

The diagnosis is inclusion body myositis (IBM). This is an inflammatory condition affecting patients over the age of 50. Proximal muscles in the upper and lower limbs, and finger flexors are predominantly involved. The onset of muscle weakness in IBM is generally gradual (over months or years). Dysphagia is common, occurring in 40-66% of patients.

IBM occurs more frequently in men than women. CK may be normal. A muscle biopsy usually shows intracytoplasmic inclusions and also inflammatory infiltrates.



Thigh atrophy seen in inclusion body myositis



Inclusion bodies and inflammatory infiltrates (arrows)



[ Q: 199 ] MRCPass - Rheumatology

A 53 year old woman with rheumatoid arthritis was referred with iron deficiency anaemia. She had extensive investigations. Endoscopy showed gastritis and antral erosions, small bowel biopsy showing mild villous blunting, and apoptotic bodies, Colonoscopy was normal.

*What is the cause of these findings?*

- 1- Methotrexate
- 2- Azathioprine therapy
- 3- Crohn's disease
- 4- NSAID therapy
- 5- Felty's syndrome

#### Answer & Comments

**Answer:** 4- NSAID therapy

The endoscopy findings are suggestive of NSAID related gastritis, which is the most likely cause of iron deficiency anaemia.



NSAID related gastritis



## [ Q: 200 ] MRCPass - Rheumatology

A 45 year old woman complains of 12 months of mid and lower back pain associated with stiffness in her shoulders, wrists, small joints of the hands, hips knees and feet. The joint stiffness is more pronounced in the morning and lasts 2-3 hours and is associated with severe fatigue.

She also experiences occasional pins and needles affecting all of the right hand and frequent frontal and temporal headache.

Clinical examination demonstrates no synovitis but tenderness around the base of the cervical spine, across the shoulders, over the costochondral cartilages, greater trochanter and the knee.

Investigations are as follows : CRP <5 g/l, ESR 20 mm in the first hour, CK 120 U/l, serum immunoglobulins and protein electrophoresis normal.

*What is the diagnosis?*

- 1- SLE
- 2- Polymyalgia rheumatica
- 3- Fibromyalgia
- 4- Dermatomyositis
- 5- Polymyositis

## Answer &amp; Comments

Answer: 3- Fibromyalgia

The above symptoms are all characteristic for fibromyalgia. The inflammatory markers and CK are not raised, making the other diagnoses unlikely



## [ Q: 201 ] MRCPass - Rheumatology

A 35 year old man presents with hot swollen elbow joint. He has a temperature of 37°C and CRP of 350mg/l. A diagnosis of septic arthritis is suspected.

*Which of the following organisms is most commonly isolated from joints?*

- 1- Staphylococcus aureus
- 2- Neisseria gonorrhoeae
- 3-  $\beta$ -haemolytic streptococcus
- 4- Pseudomonas aeruginosa
- 5- Moraxella catarrhalis

## Answer &amp; Comments

Answer: 1- Staphylococcus aureus

Staph aureus is the commonest organism (over 50%). Neisseria gonorrhea can occur in patients with sexually transmitted disease.  $\beta$ -haemolytic streptococci can cause impetigo, sore throat and rheumatic fever. Moraxella is a gram negative coccus which can cause pneumonia in COPD patients.



## [ Q: 202 ] MRCPass - Rheumatology

A 66 year old lady had a fall and fractured femur. A DEXA scan shows reduced bone mineral density consistent with osteoporosis.

*What treatment should be given to reduce the likelihood of future fractures?*

- 1- Alendronate
- 2- Alendronate and calcium
- 3- Alendronate, calcium and vitamin D
- 4- Calcium
- 5- Vitamin D

## Answer &amp; Comments

Answer: 3- Alendronate, calcium and vitamin D

Any patient above the age of 65 with osteoporosis is recommended to be on bisphosphonates. In addition, this patient has sustained a fracture, and should also be on calcium and vitamin D (calcichew D3) as well.



## [ Q: 203 ] MRCPass - Rheumatology

A 82 year old woman presents with



confusion. Of note in her past history was Raynaud's phenomenon.

Her investigations show :

haemoglobin 9.7 g/dl

white cell count  $3.6 \times 10^9/L$

platelet count  $100 \times 10^9/L$

serum total protein 120 g/l

serum immunoglobulins : IgA 0.75 g/l (0.83), IgG 16 g/l (6-13), IgM 35 g/l (0.4-2.5)

*Which of the following complications is she likely develop?*

- 1- Urinary tract infection
- 2- Hyperviscosity syndrome
- 3- Pathological bone fracture
- 4- Acute renal failure
- 5- Erythema nodosum

#### Answer & Comments

**Answer:** 2- Hyperviscosity syndrome

The likely diagnosis is Waldenstrom's Macroglobulinaemia (WM).

Waldenstrom's macroglobulinaemia is a type of non-Hodgkin's lymphoma. It is a condition which typically presents in the seventh and eighth decade of life. It is characterized by the presence of a high level of a macroglobulin immunoglobulin M [IgM] and elevated serum viscosity in the presence of a lymphoplasmacytic infiltrate in the bone marrow . The treatment is chemotherapy (Chlorambucil or Fludarabine).



#### [ Q: 204 ] MRCPass - Rheumatology

A 72 year old woman complained of pain at the base of her right thumb. There was tenderness and swelling of the right first carpo-metacarpal joint. Finkelstein's test is negative.

*What is the most likely diagnosis?*

- 1- Avascular necrosis of the scaphoid

2- De Quervain's tenosynovitis

3- Osteoarthritis

4- Psoriatic arthritis

5- Rheumatoid arthritis

#### Answer & Comments

**Answer:** 3- Osteoarthritis

The tenderness at the carpometacarpal joint is most likely due to osteoarthritis in a patient of this age.



#### [ Q: 205 ] MRCPass - Rheumatology

A 45 year old man presents to the ophthalmologist and was found to have anterior uveitis. Upon enquiry, he has mouth ulcers and a rash on his leg.

*What is the likely diagnosis?*

- 1- AL amyloidosis
- 2- Familial mediterranean fever
- 3- Behcet's disease
- 4- Polymyalgia rheumatica
- 5- SLE

#### Answer & Comments

**Answer:** 3- Behcet's disease

Behçet's disease may cause anterior or posterior uveitis, corneal ulceration, conjunctivitis, papillitis, SVC and IVC thrombosis, pulmonary embolism, erythema nodosum, pustular lesions, acneiform nodules, pathergy and oral ulceration.



Anterior Uveitis in Behcet's disease



#### [ Q: 206 ] MRCPass - Rheumatology

*In a patient with SLE, the risk of cardiovascular abnormality is increased with presence of which one of the following?*

- 1- Anticardiolipin antibody
- 2- Anti- Ro antibody
- 3- Anti La antibody
- 4- ANA antibody
- 5- Anti Jo antibody

#### Answer & Comments

Answer: 2- Anti- Ro antibody

Anti-Ro is important in pregnancy since it is associated with babies born with congenital heart block.



#### [ Q: 207 ] MRCPass - Rheumatology

A 50 year old secretary noticed tingling and numbness over the palmar surface of her thumb, index and middle fingers after several hours at her computer. Pain in the same areas often occur at night.

*What is the diagnosis?*

- 1- Rheumatoid arthritis
- 2- Gout
- 3- Dermatomyositis
- 4- Carpal tunnel syndrome
- 5- Psoriatic arthritis

#### Answer & Comments

Answer: 4- Carpal tunnel syndrome

The diagnosis is carpal tunnel syndrome, and the symptoms are due to tenosynovitis which is worsened by repetitive strain imposed by typing.



#### [ Q: 208 ] MRCPass - Rheumatology

A 75 year old man complains of pain and stiffness in both his shoulders. He has lost 1/2 a stone in last 6 weeks due to loss of

appetite. Investigations show : ESR 95 mm/hr, normochromic normocytic anaemia and a positive rheumatoid factor.

*The likely diagnosis is:*

- 1- Fibromyalgia
- 2- Polymyositis
- 3- Dermatomyositis
- 4- Polymyalgia Rheumatica
- 5- Chronic myeloid leukaemia

#### Answer & Comments

Answer: 4- Polymyalgia Rheumatica

Polymyalgia Rheumatica is associated with weight loss, anemia & malaise.

It can also be associated with a false positive rheumatoid factor, especially in the elderly.



#### [ Q: 209 ] MRCPass - Rheumatology

A 12 year old boy has fevers. He has had elbow , shoulder and hip and knee pains over the last few months. On examination, he has a temperature of 37.5 C and palpable hepatosplenomegaly.

Investigations show a CRP of 30 and negative ANA.

*What is the likely diagnosis?*

- 1- Marfan's syndrome
- 2- Ehler Danlos syndrome
- 3- Perthe's disease
- 4- Juvenile chronic arthritis
- 5- Osteoarthritis

#### Answer & Comments

Answer: 4- Juvenile chronic arthritis

Juvenile chronic arthritis (JCA) is a form of seronegative arthritis in the young (adult form known as Still's disease) which is rheumatoid factor and ANA negative. Diagnostic criteria include high fever, hepatomegaly,



splenomegaly, lymphadenopathy, serositis (pleuritis, pericarditis), leucocytosis. Bone destruction and micrognathia occurs.



[ Q: 210 ] MRCPass - Rheumatology

A 25 year old lady presents to clinic with a painfully swollen hot right knee. She gives a 2 week history of migratory polyarthritides and urethritis. Clinical examination reveals a pustular skin rash, right Achilles tendinitis and left plantar fasciitis. She is HLA-B27 negative.

*What is the most likely diagnosis?*

- 1- Relapsing polychondritis
- 2- Reiter's syndrome
- 3- Gonococcal arthritis
- 4- Non specific urethritis
- 5- Behcet's syndrome

Answer & Comments

Answer: 3- Gonococcal arthritis

Gonococcal arthritis classically presents with a hot joint on a background of a migrating polyarthropathy. It affects women more frequently than men (4:1) and its highest incidence is among sexually active adolescent girls. There is also increased risk during menstruation and pregnancy.

Two forms of arthritis exist -- one with skin rashes and multiple joint involvement, and a second, less common, form in which disseminated gonococemia leads to infection of a single joint (monoarticular) and joint fluid cultures are positive.



[ Q: 211 ] MRCPass - Rheumatology

A 50 year old woman with longstanding rheumatoid arthritis, and a sicca syndrome. She presents with increasing malaise. Investigations showed:

Hb 7.5 g/dl

Neutrophil count  $1.2 \times 10^9/L$

platelet count  $90 \times 10^9/L$

Her ESR was 120 mm/hr and CRP 145 mg/dl

On examination, she was pale and had palpable splenomegaly of 6 cm edge.

*The most likely cause of her haematologic abnormalities is:*

- 1- Anaemia chronic disease
- 2- Upper GI bleed
- 3- Felty's syndrome
- 4- Folate deficiency
- 5- Iron deficiency

Answer & Comments

Answer: 3- Felty's syndrome

Felty's syndrome is the triad of seropositive arthritis, splenomegaly and neutropenia.

The cause of Felty's syndrome is not known, but is most commonly associated with rheumatoid arthritis.



[ Q: 212 ] MRCPass - Rheumatology

32 year old lady upper middle class white lady who used to be an athlete has been referred for investigation due to tiredness. She mentions fatigue which is chronic and occurs even after minor physical work. This has been going on for 3 years. Investigations including CK, ESR, EMGs and muscle biopsy have revealed no obvious medical cause for this.

*Which of the following is the best treatment?*

- 1- Erythropoietin injections
- 2- Cognitive behavioural therapy
- 3- Graded exercise programme
- 4- Codeine
- 5- Fluoxetine

## Answer &amp; Comments

**Answer:** 3- Graded exercise programme

Chronic Fatigue syndrome is defined by symptoms and not signs. The clinical profile of an individual with CFS is of a high-achieving student or athlete who usually is female (80%), white, and middle-class to upper middle-class. Treatment is largely supportive and responsive to symptomatology. This includes physical therapy and modest aerobic or anaerobic exercise (if possible) to avoid cardiovascular deconditioning. Sleep may be addressed with medication; often, melatonin or night-time amitriptyline is helpful. If present and severe, pain often is addressed in a pain clinic.



## [ Q: 213 ] MRCPass - Rheumatology

A 45 year old patient presents with proximal muscle weakness, particularly in the lower limbs. She has a heliotropic rash around the eyes and also Gottron's papules.

*Which one of the following antibodies is most strongly associated?*

- 1- La
- 2- Ro
- 3- Jo-1
- 4- SCL-70
- 5- Anti DsDNA

## Answer &amp; Comments

**Answer:** 3- Jo-1

The diagnosis is dermatomyositis. Anti Jo-1 antibody is associated with acute onset myositis, particularly dermatomyositis. The limb girdle or proximal muscles are most severely affected in both polymyositis and dermatomyositis.



Gottron's papules



## [ Q: 214 ] MRCPass - Rheumatology

A 9-year-old boy is brought to the paediatrician with complaints of fever for 1 week. He also has cracked lips, which are painful.

On examination, his eyes are red and he has a lymph node in the cervical region. Kawasaki syndrome is suspected.

*Which of the following is the best treatment choice?*

- 1- Intravenous immunoglobulin
- 2- Hydrocortisone
- 3- Abxiximab
- 4- Amoxicillin
- 5- Low molecular weight heparin

## Answer &amp; Comments

**Answer:** 1- Intravenous immunoglobulin

This is a case of Kawasaki's syndrome, which is also known as mucocutaneous lymph node syndrome and occurs mainly in children under 10 years of age. It is a form of vasculitis, which affects coronary arteries and is associated with the development of coronary aneurysms.

Aspirin and IV immunoglobulin at high doses is the treatment of choice. Corticosteroids used to be contraindicated, but recently trials have shown that it reduced the risk of heart damage caused by coronary vessel vasculitis.

Infliximab is also being used in trials. Warfarin is used if coronary aneurysms develop as a complication.



[ Q: 215 ] MRCPass - Rheumatology

A 55 year old woman presents with a 2 month history of pain affecting the cervical spine and both shoulders, this was preceded by pain in the lower back and both hips. Early morning stiffness lasts until lunchtime and she feels markedly tired and weak. Examination reveals bilateral knee effusions and a right carpal tunnel syndrome.

Investigations demonstrate a normochromic normocytic anaemia of Hb 9.8 g/dl, ESR 72 mm in the first hour, CRP 12 g/l, serum immunoglobulins and protein electrophoresis show a polyclonal increase in gamma globulins and elevated alpha 1 and alpha 2 globulins but no paraprotein band.

*What is the most likely diagnosis?*

- 1- Rheumatoid arthritis
- 2- Paraneoplastic syndrome
- 3- Mixed connective tissue disease
- 4- Scleroderma
- 5- Polymyalgia rheumatica

Answer & Comments

Answer: 5- Polymyalgia rheumatica

Polymyalgia rheumatica (PMR) is a clinical diagnosis based on pain and stiffness of pelvic girdle and shoulder. It is more common after the age of 55.

In contrast to polymyositis there is no muscular weakness. Early morning stiffness of the hip and shoulder girdles is common. A normochromic normocytic anaemia is associated.



[ Q: 216 ] MRCPass - Rheumatology

A 55 year old man presents with sudden onset of a right-sided foot drop with numbness over the dorsum of his right foot. He has weakness of dorsiflexion and eversion of his right foot. There is an area of diminished sensation over the dorsum of the right foot. He also has a left wrist drop with loss of sensation over the dorsal aspect of the first interosseous space. For the last two months, he has lost weight and he had generalized myalgia.

Investigations reveal:

Hb 11.5 g/dL

WBC  $13 \times 10^9/L$

Neutrophils  $9.2 \times 10^9/L$

Lymphocytes  $2.2 \times 10^9/L$

ESR 60 mm/1st hour

Urinalysis: Protein ++, Blood ++

*The most likely diagnosis is:*

- 1- Tuberculosis
- 2- Polyarteritis nodosa
- 3- Sarcoidosis
- 4- Rheumatoid arthritis
- 5- Systemic lupus erythematosus

Answer & Comments

Answer: 2- Polyarteritis nodosa

The patient has a systemic illness with mononeuritis multiplex and renal involvement. Although all the listed conditions can cause mononeuritis, PAN is one of the few connective tissue disorders that usually occur in middle-aged men unlike RA and SLE, which are commoner in females.



[ Q: 217 ] MRCPass - Rheumatology

A 60 year old man presents with pain in his left foot. He mentions that he has had poor mobility. General examination reveals a

swollen ankle. Neurological examination reveals absent ankle jerk and weak foot flexion/extension on the left. His ESR is 30 mm/hr, CRP is <5mg/l. Joint x ray reveals subchondral fractures, soft tissue swelling and a narrowed joint space.

*The likely diagnosis is:*

- 1- Charcot's joint
- 2- Osteoarthritis
- 3- Gout
- 4- Juvenile chronic arthritis
- 5- Previous road traffic accident

#### Answer & Comments

Answer: 1- Charcot's joint

Charcot joint or neuropathic joint disease can be caused by diabetic neuropathy, syphilis, syringomyelia or leprosy. The X ray changes are reduced joint space with periarticular destruction, subchondral bodies, loose bodies and occasionally joint dislocation.



Charcot's joint



#### [ Q: 218 ] MRCPass - Rheumatology

A 55 year old man presents with lethargy, polyuria, polydipsia and stiffness of the hands. He has evidence of an arthropathy affecting the 2nd & 3rd metacarpophalangeal joints of both hands. Xray confirms evidence of degenerative disease at these sites.

*Which of the following the likely diagnosis?*

- 1- Behcet's syndrome
- 2- Haemochromatosis
- 3- Amyloidosis

- 4- Reiter's syndrome
- 5- Osteoarthritis

#### Answer & Comments

Answer: 2- Haemochromatosis

The characteristic feature of haemochromatotic arthropathy is involvement of the second and third metacarpals. The arthropathy can lead to extensive joint destruction.

These patients may have episodes of acute, inflammatory pseudogout from such deposition.



#### [ Q: 219 ] MRCPass - Rheumatology

An 22 year old girl presents with a 6 week history of polyarthralgia with early morning stiffness. Her symptoms responded well initially to Ibuprofen but she then they worsen again. She is otherwise well apart from a history of acne which well controlled on Minocycline. Her mother severe rheumatoid arthritis.

Investigations show : ESR 40 mm/hr, CRP 110 mg/l, rheumatoid factor negative, ANA strongly positive (1:1600), antidsDNA antibodies negative.

*What is the likely cause of her symptoms?*

- 1- Drug induced lupus
- 2- Systemic Lupus Erythematosus
- 3- Psoriatic arthropathy
- 4- Juvenile chronic arthritis
- 5- Fibromyalgia

#### Answer & Comments

Answer: 1- Drug induced lupus

The likely diagnosis is drug induced SLE. Minocycline is one of the causes well documented as a cause of drug induced SLE.

Characteristically, inflammatory markers such as ESR & CRP are both markedly elevated. ANA can be strongly positive but Anti-dsDNA antibodies are usually negative. Symptoms usually resolve following withdrawal of the drug after several months.



[ Q: 220 ] MRCPass - Rheumatology

A 50 year old woman presents to casualty with a 2 day history of pain and swelling of the left ankle. She denies any history of recent trauma. On examination, she was febrile, temperature 38.3 C. The left ankle was swollen and very tender with a reduced range of movement.

*Which of the following investigations would be most helpful?*

- 1- Urate level
- 2- ESR
- 3- Rheumatoid factor
- 4- Aspiration of synovial fluid
- 5- Knee X ray

Answer & Comments

Answer: 4- Aspiration of synovial fluid

Joint fluid examination is important in excluding septic arthritis, and can also help to confirm gout or pseudogout.



[ Q: 221 ] MRCPass - Rheumatology

A 35 year old woman with newly diagnosed rheumatoid arthritis enquires about risk factors.

*Which one of the following is a risk factor for rheumatoid arthritis?*

- 1- Pneumococcal infection
- 2- HLA-DR4
- 3- SLE
- 4- HIV
- 5- Renal failure

Answer & Comments

Answer: 2- HLA-DR4

Risk factors for rheumatoid arthritis are :

HLA-DR4

EBV

parvovirus B19 and rubella infections

blood transfusion

smoking (induces RF production)

stress

obesity

Pregnancy and OCP are protective.



[ Q: 222 ] MRCPass - Rheumatology

A 26 year old man presents with a 6 month history of low back pain. The pain radiates to his buttocks. There is associated stiffness which is worse in the morning and after periods of inactivity.

*Which of the following signs is most likely to be present?*

- 1- Foot drop
- 2- Positive femoral stretch test
- 3- Positive Trendelenburg test
- 4- Sacroiliac joint tenderness
- 5- Kernig's sign

Answer & Comments

Answer: 4- Sacroiliac joint tenderness

The diagnosis is ankylosing spondylitis as this is a young patient with lower back pains and morning stiffness. Sacroiliitis is a common manifestation.



[ Q: 223 ] MRCPass - Rheumatology

A 62 year old man has complains of a pain in the temples, fevers, sweats and malaise for 4 weeks. The right side of the face

was mildly swollen and he experienced visual loss in the right eye.

On examination, he had prominent and tender temporal arteries on the right.

Blood tests revealed:

Hb 12.5 g/dl                      MCV 86 fl  
WCC  $12 \times 10^9/L$               platelets  $212 \times 10^9/L$   
ESR of 90 mm/hr

*What is the likely diagnosis?*

- 1- Pituitary tumour
- 2- Grave's disease
- 3- Paget's disease
- 4- Cataract
- 5- Temporal arteritis

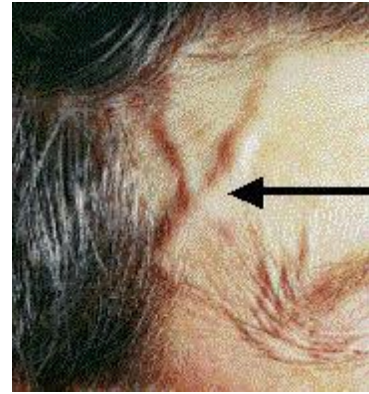
#### Answer & Comments

Answer: 5- Temporal arteritis

The diagnosis is temporal arteritis (giant cell arteritis).

The complications of Giant Cell Arthritis are related to arterial inflammation. These include:

- blindness
- absent pulses
- hypertension
- angina
- stroke
- claudication



Prominent temporal arteries



[ Q: 224 ] MRCPass - Rheumatology

A 60 year old woman presents with a history of progressive difficulty in climbing stairs and rising from chairs.

She also complains of difficulty in swallowing. She complains that her hands discolour and become cold easily.

On examination she has purple discolouration of her eyelids and periorbital oedema. There is weakness of the muscles of her limb girdles.

*What is the likely cause of the dysphagia?*

- 1- Oesophageal cancer
- 2- Dermatomyositis
- 3- Systemic Lupus Erythematosus
- 4- Retrosternal goitre
- 5- Scleroderma

#### Answer & Comments

Answer: 2- Dermatomyositis

The diagnosis is dermatomyositis. Dysphagia in dermatomyositis is primarily due to weakness of the striated musculature of the posterior pharynx. Dysphagia may also result from cricopharyngeal obstruction secondary to inflammation or fibrosis of the cricopharyngeus muscles.





Heliotrope rash in dermatomyositis



## [ Q: 225 ] MRCPass - Rheumatology

A 60 year old man is on frusemide for leg oedema. He presents with a painful swollen knee. His temperature is 38 °C and he has a white cell count of  $12 \times 10^9/L$  and CRP of 120mg/l. Uric acid is 0.49 mmol/l (<0.42).

A joint aspirate reveals pus cells and negatively birefringent crystals with polarized light. After treatment with NSAIDs for 48 hours he has not improved and the swelling persists. There are no organisms cultured from the joint aspirate or blood cultures.

*What is the best course of action?*

- 1- Allopurinol
- 2- MRI to look for osteomyelitis
- 3- Intravenous flucloxacillin
- 4- Arthroscopy and washout
- 5- Further joint aspiration with depomedrone injection

## Answer &amp; Comments

Answer: 5- Further joint aspiration with depomedrone injection

This is a case of acute gout which has not settled on medical therapy (NSAIDs or colchicine). The raised inflammatory markers can be due to acute gout. Uric acid levels are not necessarily high in acute gout. A depomedrone (steroid) injection with further aspiration of joint fluid is the next step.



## [ Q: 226 ] MRCPass - Rheumatology

A 40 year old lady presents with polyuria and thirst. Her serum calcium of 2.85 mmol/l and a parathyroid hormone of 12 (1-8) pmol/l. She has normal renal function.

*Which test provides the best assessment?*

- 1- CT of her spine
- 2- Dual energy X-ray absorptiometry
- 3- Vitamin D levels
- 4- Isotope bone scan
- 5- Urine bence jones protein

## Answer &amp; Comments

Answer: 2- Dual energy X-ray absorptiometry

This patient is likely to have primary hyperparathyroidism (secondary to a parathyroid adenoma). The best assessment is to determine the severity of loss of bone density with a DEXA scan in order to consider parathyroid surgery is necessary.



## [ Q: 227 ] MRCPass - Rheumatology

An 45 year old man has had worsening back pains, shoulder pains and right hip pain for 8 years. The pain is typically worse at the end of day. He also has bony enlargement of the distal interphalangeal joints. An X ray of the shoulder reveals the presence of prominent osteophytes. There is sclerosis and narrowing of the joint space at the hip joints on the pelvic X ray.

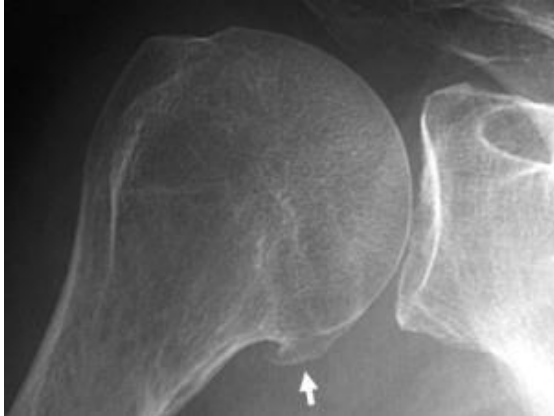
*What is the likely diagnosis?*

- 1- Osteomyelitis
- 2- Osteoarthritis
- 3- Osteomalacia
- 4- Rheumatoid arthritis
- 5- Paget's disease

## Answer &amp; Comments

Answer: 2- Osteoarthritis

The clinical history suggests early onset osteoarthritis (which can be idiopathic or occur in athletes). The X ray features of osteophytes, sclerosis and narrowing of joint space are suggestive of osteoarthritis.



Osteophyte on a shoulder X ray



[ Q: 228 ] MRCPass - Rheumatology

A 35 year old woman has generalized joint pains and muscle aches. She also complains of gritty sensations in the eye in the mornings. Blood tests show Anti Nuclear Antibody ++, Rheumatoid Factor ++.

*What is the diagnosis?*

- 1- Polymyositis
- 2- Reiter's syndrome
- 3- Primary Sjogren's syndrome
- 4- Polyarteritis nodosa
- 5- Rheumatoid arthritis

Answer & Comments

Answer: 3- Primary Sjogren's syndrome

Dry mouth, dry eyes, fatigue, muscle aches and joint pains are typical of Sjogren's syndrome. 80% of patients are ANA positive and 75% are Rheumatoid factor positive. A useful diagnostic test is the Schirmer's test, where a piece of filter paper is placed in the corner of the eye to measure the degree of wetting after five minutes.



[ Q: 229 ] MRCPass - Rheumatology

A 60 year old woman presents with a two week history of malaise and lower limb joint pains. On examination she had a vasculitic rash over her shins, thighs and buttocks. Investigations revealed:

Hb 10.2 g/dL

platelets  $265 \times 10^9/L$

creatinine  $380 \mu\text{mol/L}$

antinuclear antibodies - Negative

antineutrophil cytoplasmic antibodies - Negative

antiglomerular basement membrane antibodies - Negative

dipstick urinalysis - blood+++

protein +

*What is the likely diagnosis causing renal impairment?*

- 1- Psoriatic arthritis
- 2- Henoch Schönlein purpura
- 3- Polymyositis
- 4- Membranous nephropathy
- 5- Myeloma

Answer & Comments

Answer: 2- Henoch Schönlein purpura

The distribution of the rash together with lower limb joint pains are suggestive of Henoch Schönlein purpura. This usually occurs in children aged 2-10 years but can occur in older age groups. The only way of differentiating this condition from other small vessel vasculitides is by biopsy. This would show IgA deposition in vessel walls on direct immunofluorescence.



[ Q: 230 ] MRCPass - Rheumatology

A 28 year old woman presents with a

right knee joint pain and a 4 month history of weight loss. She thinks she has lost weight because of diarrhoea, which occurs several times a day. Examination reveals a swollen, tender right knee joint with a small effusion.

*The likely diagnosis is:*

- 1- Reiter's syndrome
- 2- Inflammatory bowel disease
- 3- Behcet's disease
- 4- Campylobacter infection
- 5- Rheumatoid arthritis

#### Answer & Comments

Answer: 2- Inflammatory bowel disease

The description of weight loss, diarrhoea and a mono/oligoarthropathy suggests a diagnosis of inflammatory bowel disease. Peripheral arthritis, peripheral arthralgia without joint swelling or effusion, degenerative joint disease or seropositive arthritis can occur in inflammatory bowel disease. In patients with peripheral arthralgia and peripheral arthritis, there is a significantly greater prevalence of mucocutaneous manifestations of IBD i.e. oral ulceration, erythema nodosum, pyoderma gangrenosum, and uveitis.



#### [ Q: 231 ] MRCPass - Rheumatology

A professional tennis player presents with shoulder pains especially whilst serving the ball. He has limited passive and active shoulder abduction to less than 60°. His temperature is 36.5°C and he has a normal white cell count. There is tenderness around the anterior portion of the shoulder joint.

*Which diagnosis is likely?*

- 1- Glenohumeral joint osteoarthritis
- 2- Bursitis
- 3- Tennis elbow
- 4- Supraspinatus tendonitis
- 5- Septic arthritis

#### Answer & Comments

Answer: 4- Supraspinatus tendonitis

Pain during abduction with limitation of movement is suggestive of supraspinatus tendonitis. Palpation or compression around the greater tubercle of the humerus is particularly tender.



#### [ Q: 232 ] MRCPass - Rheumatology

A 45 year woman has Raynaud's phenomenon. She also has difficulty in swallowing and dyspnoea.

Echocardiography shows right heart strain. Blood tests reveal renal impairment.

*Which one of the following antibodies is specific to this lady's condition?*

- 1- Anticentromere antibody
- 2- Topoisomerase I
- 3- Anti ds DNA antibody
- 4- Anti SCL 70 antibody
- 5- Anti mitochondrial antibody

#### Answer & Comments

Answer: 4- Anti SCL 70 antibody

Anti SCL70 antibody (topoisomerase I) is typically found in progressive systemic sclerosis (not the limited cutaneous form, CREST).



#### [ Q: 233 ] MRCPass - Rheumatology

A 55 year old man presents with a 6 week history of lethargy and diffuse purpuric rash. He is noted to have a right foot drop and a left ulnar nerve palsy. He complains of arthralgia but has no clinical evidence of inflammatory joint disease. Echocardiogram is unremarkable, blood cultures are negative, ESR 80 mm/hr, ANCA negative, ANA negative, rheumatoid factor strongly positive, C3 1.1 g/l (0.75 - 1.6), C4 0.03 g/l (0.14 - 0.5).

Dipstick urinalysis shows blood ++.

*What is the likely diagnosis?*

- 1- Takayasu's arteritis
- 2- ANA negative SLE
- 3- Culture negative endocarditis
- 4- Cryoglobulinaemia
- 5- Rheumatic fever

#### Answer & Comments

Answer: 4- Cryoglobulinaemia

A low C4 together with a strongly positive rheumatoid factor suggests cryoglobulinaemia as a cause of mononeuritis multiplex and rash. Palpable purpura, arthralgia, hepatosplenomegaly, diffuse proliferative glomerulonephritis, Raynaud's phenomenon and thrombosis may occur.

Type I cryoglobulinaemia may be associated with lymphoproliferative disorders, multiple myeloma, and monoclonal gammopathy of uncertain significance, and macroglobulinaemia. Plasmapheresis may reduce the levels of cryoglobulin.

Type II cryoglobulinaemia (mixed monoclonal) is usually composed of a monoclonal component (usually IgG, IgM or IgA) and a polyclonal component (mainly IgG). Causes are connective tissue diseases, Hepatitis B and C infection, infectious mononucleosis and lymphoma.



[ Q: 234 ] MRCPass - Rheumatology

A 70 year old woman with a history of multiple myeloma has a serum calcium of 2.9 mmol/l. He is prescribed pamidronate infusion over 4 days.

*What is its mechanism of action?*

- 1- Promotes calcitonin
- 2- Increases calcitriol levels
- 3- Inhibit osteoclasts
- 4- inhibit osteoblasts

- 5- Stimulate parathyroid hormone secretion

#### Answer & Comments

Answer: 3- Inhibit osteoclasts

Bisphosphonates inhibits osteoclasts and reduces progression towards bone destruction.



[ Q: 235 ] MRCPass - Rheumatology

A 80 year old lady presents with a 5 day history of severe left temporal headache radiating from her eye to the scalp. She had also experienced jaw discomfort during eating.

*Which of the following drugs should be given while awaiting results of diagnostic tests?*

- 1- Carbamazepine
- 2- Prednisolone
- 3- Azathioprine
- 4- Infliximab
- 5- Intravenous immunoglobulin

#### Answer & Comments

Answer: 2- Prednisolone

The history suggests temporal arteritis. In view of the vision threatening nature of disease, the patient should be commenced on steroids. Typically 60mg of prednisolone per day is recommended.



[ Q: 236 ] MRCPass - Rheumatology

A 30 year old woman has a 3 month history of arthralgia. There is swelling of the distal interphalangeal joints of the ring fingers of the hand. The wrist on the right and ankles are swollen as well. Onycholysis was noted on the nails. Her serum inflammatory markers are raised.

*Which of the following is the likely diagnosis?*

- 1- Polymyalgia rheumatica

2- Rheumatoid arthritis

3- Gout

4- Psoriatic arthropathy

5- SLE

## Answer &amp; Comments

**Answer:** 4- Psoriatic arthropathy

Psoriatic arthritis affects distal interphalangeal joints tends to be asymmetrical.

There are 5 types of psoriatic arthritis.

Asymmetrical oligoarticular arthritis is thought to be the most common type. Usually, the digits of the hands and feet are affected first, with inflammation of the flexor tendon and synovium occurring simultaneously, leading to the typical "sausage" appearance (dactylitis).

The other types are symmetrical polyarthritis, DIP arthropathy, arthritis mutilans and spondylitis with or without sacroilitis.



Psoriatic arthropathy

**[ Q: 237 ] MRCPass - Rheumatology**

A 60 year old lady has severe rheumatoid arthritis. She is currently on Methotrexate 20 mg weekly for the past 5 months and also has been receiving regular infusions of Infliximab. Her joint disease dramatically improved. She now presents with fevers, cough and there is evidence a large left sided pleural effusion on her CXR.

*What is the likely diagnosis?*

1- Methotrexate pneumonitis

2- CMV infection

3- Tuberculosis

4- Bronchial carcinoma

5- Rheumatoid related pulmonary fibrosis

## Answer &amp; Comments

**Answer:** 3- Tuberculosis

Serious opportunistic infections have been associated with the anti TNF alpha drug infliximab, but the frequency of TB exceeds that associated with other infections. Infliximab may increase the risk of lymphoma.

**[ Q: 238 ] MRCPass - Rheumatology**

A 75 year old man presents with an acute onset of severe pain and swelling of the left elbow. He mentions that he had a chest infection 3 weeks ago. On examination, he had a temperature of 38°C and the left elbow was erythematous, swollen and tender.

*What is the most appropriate investigation?*

1- C reactive protein

2- Full blood count

3- Joint aspiration

4- Uric acid level

5- X-ray of the joint

## Answer &amp; Comments

**Answer:** 3- Joint aspiration

This patient is likely to have reactive arthritis. However, gram stain and culture are necessary to exclude septic arthritis.

**[ Q: 239 ] MRCPass - Rheumatology**

A 75 year old man has significant bony pains which have been occurring for 3 years. He presents to the clinic for assessment and the investigations results were obtained below:

Corrected calcium 2.4 (2.2 - 2.6)



ESR 20 mm/1st hr

Alkaline phosphatase 625 iu/L (50 - 100)

gamma GT 42 iu/L (10-50)

Prostate specific antigen 7.4 pg/L (0-6)

*What is the most likely diagnosis?*

- 1- Osteoporosis
- 2- Osteomalacia
- 3- Metastatic prostatic carcinoma
- 4- Paget's disease
- 5- Multiple myeloma

#### Answer & Comments

Answer: 4- Paget's disease

Paget's disease causes a high alkaline phosphatase and normal calcium levels.

Paget's Disease represents an imbalance of bone formation and resorption. It typically begins with excessive bone resorption followed by excessive bone formation. The main disturbance is an exaggeration of osteoclastic bone resorption.

The most common sites of involvement include the spine, pelvis, skull, femur and tibia. Skull involvement may produce enlargement of the head characterized by more evident frontal bossing and dilated superficial cranial muscles.

Conductive and/or sensorineural hearing loss may result from disease of the temporal bone or ossicles.



#### [ Q: 240 ] MRCPass - Rheumatology

A 75 year old patient with osteoarthritis of the knee has been taking codeine 30mg qds and also paracetamol regularly. He continues to have knee pains.

*What is the next best treatment?*

- 1- Diclofenac

- 2- Morphine
- 3- Ibuprofen gel
- 4- Higher dose of codeine
- 5- Oral hydrocortisone

#### Answer & Comments

Answer: 3- Ibuprofen gel

NSAIDs tend to be better for pain control in osteoarthritis, but have significant side effects. Local NSAID application should be considered as well as intraarticular steroid injections.



#### [ Q: 241 ] MRCPass - Rheumatology

A 40 year old lady presents with a swollen right knee. This was aspirated. Under the polarised microscope, there were neutrophils +++ and some blue rhomboidal crystals under parallel polarised light.

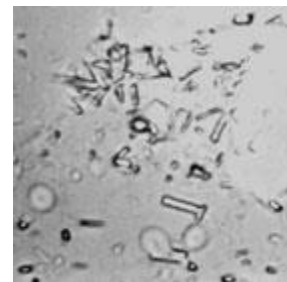
*The most likely diagnosis is:*

- 1- Osteoarthritis
- 2- Rheumatoid arthritis
- 3- Gout
- 4- Pseudogout
- 5- Septic arthritis

#### Answer & Comments

Answer: 4- Pseudogout

The blue colour and positively birefringent crystals under polarised light suggest pseudogout. Neutrophil levels are high in infection, gout and pseudogout.







## [ Q: 242 ] MRCPass - Rheumatology

A 45 year old man has a renal transplant. He presents with a hot swollen ankle on the left and fevers. The symptoms have been present for 2 days.

*What should be done?*

- 1- Check serum uric acid level
- 2- Inject intra-articular steroids
- 3- Give colchicine
- 4- Send joint fluid for microscopy and culture
- 5- Intravenous cefuroxime

## Answer &amp; Comments

**Answer:** 4- Send joint fluid for microscopy and culture

The differential diagnosis is gout (common in renal patients) but the patient will be in immunosuppression and septic arthritis should be excluded with joint fluid culture.



## [ Q: 243 ] MRCPass - Rheumatology

A 40 year old athlete has pain on abduction of her arm, particularly when resisted.

*Which tendon pathology is affected?*

- 1- Biceps tendonitis
- 2- Supraspinatus tendonitis
- 3- Teres minor tendonitis
- 4- Infraspinatus tendinitis
- 5- Subscapularis tendonitis

## Answer &amp; Comments

**Answer:** 2- Supraspinatus tendonitis

Pain in abduction up to 90 degrees is due to supraspinatus tendonitis.



Illustration of supraspinatus muscle



## [ Q: 244 ] MRCPass - Rheumatology

A 60 year old man has worsening discomfort in both shoulders. He is haemodialysis dependent. Past medical history included bilateral carpal tunnel decompression. His Investigations reveal: haemoglobin 9.8 g/dl, ESR 35 mm/1st hr, C reactive protein 15 mg/L, Urate 0.58.

*What is the likely diagnosis?*

- 1- Reiter's syndrome
- 2- Amyloidosis
- 3- Polymyalgia rheumatica
- 4- Gout
- 5- Osteomalacia

## Answer &amp; Comments

**Answer:** 2- Amyloidosis

b2 microglobulin deposition in joints may lead to amyloidosis. This can occur 10 years on from dialysis, and lead to carpal tunnel syndrome.



## [ Q: 245 ] MRCPass - Rheumatology

A 45 year old man presents with a painful swollen knee. He feels generally unwell and has fever. He has recently had a flulike illness, an erythematous rash on the trunk followed by a self-limiting episode of diarrhoea. A diagnosis of reactive arthritis is made by the rheumatologist.

*How should the patient be managed?*

- 1- High dose steroids

- 2- Broad spectrum iv antibiotics
- 3- Arthroscopy and washout of the joint
- 4- If the symptoms becomes chronic, sulphasalazine may be useful
- 5- Bone scan to look for a focus of infection

#### Answer & Comments

**Answer:** 4- If the symptoms becomes chronic, sulphasalazine may be useful

The diagnosis is likely to be reactive arthritis following an infectious illness. Although joint aspiration may be useful, there is no need for arthroscopy at present. NSAIDs may be used for symptoms control now. If the symptoms persist, sulphasalazine or methotrexate may be useful.



#### [ Q: 246 ] MRCPass - Rheumatology

A 16 girl is investigated for swelling and pain in the right wrist, left knee and right ankle.

Investigations show a positive ANA 1:160 with -ve Rheumatoid factor.

*What is she at risk of developing?*

- 1- Psoriasis
- 2- Butterfly facial rash
- 3- Erosive joint disease
- 4- Uveitis
- 5- Bamboo spine

#### Answer & Comments

**Answer:** 4- Uveitis

Juvenile chronic arthritis is a term used to describe arthritis occurring in someone who is less than 16 years old that lasts for more than three months. Large joints tend to be affected. Rheumatoid factor is often negative, and there is positive antinuclear antibody - especially in pauciarticular JCA. Acute anterior uveitis is most commonly in pauciarticular

juvenile chronic arthritis. Stiffness, amyloidosis, and osteoporosis also occur.



Uveitis causing red eye (lenticular precipitates may be seen)



#### [ Q: 247 ] MRCPass - Rheumatology

A 22 year old man presents with a 4 week history of a painful swollen left knee. He has a past medical history of a treated sexually transmitted disease 6 months ago. On examination there was a large effusion in the left knee.

Synovial fluid analysis shows a white cell count of  $15 \times 10^9/L$  but culture was negative.

*Which one of the following organisms is the most likely cause?*

- 1- Gardnerella
- 2- Chlamydia
- 3- Treponema pallidum
- 4- Neisseria gonorrhoea
- 5- Trichomonas vaginalis

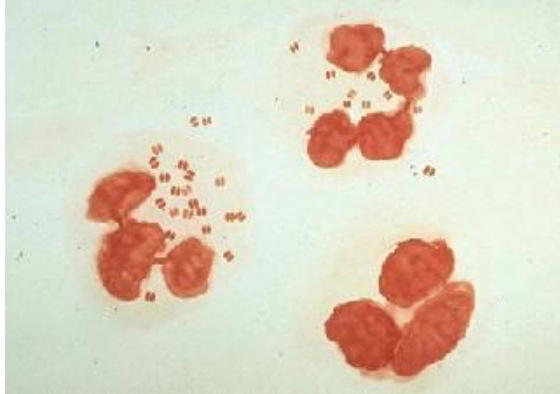
#### Answer & Comments

**Answer:** 4- Neisseria gonorrhoea

Gonococcal arthritis is caused by an infection with the gram-negative diplococcus *N gonorrhoeae*. *Neisseria gonorrhoea* occurs in young adults, often preceded by a migratory arthritis.

The bacteremic phase is a classic triad of migratory polyarthritis, tenosynovitis, and dermatitis. This patient was treated previously for a sexually acquired infection hence may be the reason for the culture to be negative.

The initial treatment of choice for gonococcal arthritis is a third-generation beta-lactamase-resistant cephalosporin (eg, ceftriaxone, ceftizoxime, cefotaxime) or a penicillin, if the organism is sensitive.



Multiple intracellular gram negative diplococci



[ Q: 248 ] MRCPass - Rheumatology

A 35 year old lady has positive ANA, and has a butterfly shaped rash on her face. Her physician makes a diagnosis of SLE. She has flare ups of joint swellings and pains requiring several months treatment with prednisolone. 1 year later she presents with hip pain limiting her mobility.

*Which one of the following is a likely cause?*

- 1- Rheumatoid arthritis
- 2- Septic arthritis
- 3- Juvenile chronic arthritis
- 4- Avascular necrosis
- 5- Perthe's disease

Answer & Comments

Answer: 4- Avascular necrosis

15% of patients with SLE develop avascular necrosis of the bone. Nephritis, vasculitis and long term steroid use predispose to avascular necrosis.



[ Q: 249 ] MRCPass - Rheumatology

A 50 year old man presents with chronic recurrent sinusitis and occasional haemoptysis. He has middle lobe patchy shadowing on his chest X-ray. His creatinine is 145 and urine dipstick shows ++ protein and blood.

*Which test result is most likely?*

- 1- Positive c ANCA
- 2- Positive ANA
- 3- Positive Kveim test
- 4- Positive ASOT
- 5- Sputum AFB positive

Answer & Comments

Answer: 1- Positive c ANCA

Nasal cavity, pulmonary and renal granulomatous involvement is classical in Wegener's granulomatosis. 70% of patients have a positive cANCA. In addition, when ANCA is positive, PR3 (Wegener's) and MPO (microscopic polyangitis) helps to distinguish between the two differential diagnoses.



[ Q: 250 ] MRCPass - Rheumatology

A 55 year old female presents complaining of bone pains and muscular weakness. Her gait is waddling in nature.

X-ray shows pseudofractures of her pubic rami.

Investigations show : Serum corrected calcium 2.05 mmol/L, phosphate 0.43 mmol/L, alkaline phosphatase 230 U/L.

*What is the diagnosis?*

- 1- Pseudohypoparathyroidism
- 2- Secondary hyperparathyroidism
- 3- Osteopetrosis
- 4- Osteomalacia
- 5- Paget's disease

## Answer &amp; Comments

**Answer:** 4- Osteomalacia

The clinical radiological and biochemical features in this patient suggest she has osteomalacia. Osteomalacia is characterized by a low serum calcium and phosphate with elevated serum alkaline phosphatase.

Osteomalacia may be caused by deficiency of vitamin D or phosphate deficiency. Malabsorption syndromes, renal failure and liver disease can result in vitamin D deficiency.



## [ Q: 251 ] MRCPass - Rheumatology

A 22 year old Armenian man presents with pain and swelling of the left knee. He also gives a history of recurrent episodes of fever, pleuritic pains in the chest, and generalised rash. These episodes typically last for 2-3 days. Examination reveals splenomegaly, swollen knees and ankles. Urine dipstick reveals 2+ proteinuria.

*What is the likely diagnosis ?*

- 1- Ankylosing spondylitis
- 2- Reactive arthritis
- 3- Familial Mediterranean fever
- 4- Tuberculosis
- 5- Dermatomyositis

## Answer &amp; Comments

**Answer:** 3- Familial Mediterranean fever

Familial Mediterranean fever is an inherited condition characterized by recurrent episodes of painful inflammation in the abdomen, chest, or joints. These episodes are often accompanied by fever and sometimes a rash. The first episode usually occurs by the age of 20 years, but in some cases, the initial attack occurs much later in life. Typically, episodes last 12 to 72 hours and can vary in severity and in the length of time between attacks.

AA amyloidosis commonly involves the kidneys, spleen and GI tract. Colchicine given prophylactically in FMF offers some protection against the development of amyloidosis in most patients.

Familial Mediterranean fever primarily affects populations originating from the Mediterranean region, particularly people of Armenian, Arabic, Turkish, and North African Jewish ancestry. Mutations in the MEFV gene cause familial Mediterranean fever.



Rash seen in familial mediterranean fever



## [ Q: 252 ] MRCPass - Rheumatology

A 35 year old man presents acutely with urethritis, conjunctivitis and arthritis. He has been having joint pains in the wrist and hips.

On examination, he has a rash on the soles of his feet and also circinate balanitis.

Rheumatoid factor is negative and he has raised inflammatory markers.

*What is the diagnosis?*

- 1- Behcet's syndrome
- 2- Rheumatoid arthritis
- 3- Reiter's syndrome
- 4- Psoriatic arthropathy
- 5- Ankylosing spondylitis

## Answer &amp; Comments

**Answer:** 3- Reiter's syndrome

Reiter's syndrome is urethritis, conjunctivitis, seronegative arthritis (cannot see, cannot pee, cannot climb a tree). The typical patient is a young man with recent urethritis or dysentery. The seronegative arthritis is usually a mono or oligoarthritis.

Other features are anterior uveitis, keratoderma blenorrhagica (brown abscesses on palms and soles), mouth ulcers, plantar fasciitis and achilles tendinitis (enthesopathy), circinate balanitis (painless rash) and aortic incompetence. Management is usually with rest and NSAIDs.



Keratoderma Blenorrhagica in Reiter's syndrome



[ Q: 253 ] MRCPass - Rheumatology

A 50 year old patient with rheumatoid arthritis has the following full blood count results: Haemoglobin 10.5 g/dL, Platelets  $450 \times 10^9/L$ , White Cell Count  $8.5 \times 10^9/L$ , MCV 103 fL.

*Which drug is the likely cause of this?*

- 1- Infliximab
- 2- Ciclosporin
- 3- Leflunomide
- 4- Prednisolone
- 5- Methotrexate

Answer & Comments

Answer: 5- Methotrexate

Methotrexate may lead to macrocytosis as a result of B12 or folate deficiency. It may also be associated with bone marrow suppression, causing leucopenia or thrombocytopenia. Methotrexate may also cause mouth ulcers, stomatitis, cough and dyspnoea.



[ Q: 254 ] MRCPass - Rheumatology

A 32 year old man has had a year's history of bilateral hip pains and back pains. There is not past medical history of trauma to the back. Non steroidal anti-inflammatory drugs helped to relieve his symptoms.

*What is the likely diagnosis?*

- 1- Gluteus medius tendonitis
- 2- Osteoarthritis
- 3- Hip fracture
- 4- Sacroilitis
- 5- Osteoarthritis

Answer & Comments

Answer: 4- Sacroilitis

Pain and stiffness in the lower back or buttocks, especially in the morning is typical of sacroilitis. It is typically helped by NSAIDs or steroids. X rays will help to confirm the diagnosis. It is associated with various inflammatory diseases e.g. ankylosing spondylitis, psoriatic arthritis.



[ Q: 255 ] MRCPass - Rheumatology

A 35 year old lady presents with stiffness, pain and swelling of her hands and wrists. On examination she has firm subcutaneous nodules over her elbow s, swelling of her wrists, ulnar deviation at the metacarpophalangeal joints, dinner fork deformity and swelling of her proximal interphalangeal joints.



Investigations reveal a normocytic, normochromic anaemia, elevated ESR and CRP.

*Which is the most commonly used test which could determine whether she is sero-positive?*

- 1- IgA antibody
- 2- IgM antibody
- 3- IgE antibody
- 4- IgD antibody
- 5- IgG antibody

#### Answer & Comments

Answer: 2- IgM antibody

The patient has features of sero positive rheumatoid arthritis (presence of rheumatoid factor). Rheumatoid factor is a circulating antibody directed against the Fc fragment of immunoglobulin. The antibody may IgM, IgG, or IgA. The commonly employed test detects the IgM rheumatoid factor.



#### [ Q: 256 ] MRCPass - Rheumatology

A 32 year old man has a 6 month history of dry eyes and mouth. On examination, there was evidence of keratoconjunctivitis, parotid gland enlargement and a Schirmer's test is positive.

His blood tests reveal a positive ANA, Ro and La extra nuclear antigens are also positive.

*What is the diagnosis?*

- 1- SLE
- 2- Rheumatoid arthritis
- 3- Sjogren's syndrome
- 4- Wegener's granulomatosis
- 5- Pulmonary eosinophilia

#### Answer & Comments

Answer: 3- Sjogren's syndrome

The patient has Sjogren's syndrome. Sjögren syndrome is a chronic autoimmune disorder characterized by xerostomia (dry mouth), xerophthalmia (dry eyes), and lymphocytic infiltration of the exocrine glands. This triad is also known as the sicca complex.

The Schirmer test is probably the only test available in the ED to strongly support or refute suspicion of Sjögren syndrome. A test strip of filter paper is placed near the lower conjunctival sac to measure tear formation. A positive test occurs when less than 5 mm of filter paper is wet after 5 minutes.

Rheumatoid factor, ANA, Ro and La antigens are commonly present.

As a result of the lymphocytic infiltration, 10% of patients may develop pseudolymphoma, a lymphoproliferative process. Approximately 10% of these patients can develop non-Hodgkin lymphoma (1% of all patients with Sjögren syndrome).



#### [ Q: 257 ] MRCPass - Rheumatology

A 38 year old lady presents with myalgia and lethargy. Her blood tests show a positive ANA with a titre of 1:1024 and rheumatoid factor is negative.

The CK is raised at 360 U/l. Extranuclear antigen tests show a negative Ro and negative La, negative Scl70 and positive ribonuclear protein antibody at 160 units.

*What is the diagnosis?*

- 1- Polymyalgia rheumatica
- 2- Polymyositis
- 3- Scleroderma
- 4- Systemic lupus erythematosus
- 5- Mixed connective tissue disease

#### Answer & Comments

Answer: 5- Mixed connective tissue disease



A positive ANA (speckled pattern), raised CK and positive anti RNP antibody suggests mixed connective tissue disease.



[ Q: 258 ] MRCPass - Rheumatology

A 50 year old man presents to the renal team with uraemic symptoms. He also has markedly reduced range of movement at the spine with a Schober's test of 10 mm.

His CRP is 102 mg/dl and ESR 98 mm/hr. Urine dipstick shows proteinuria ++++.

He has had treatment with penicillamine in the past for arthritis. He takes regular ibuprofen.

*What is the most likely cause of his renal symptoms?*

- 1- Nephritic syndrome
- 2- NSAID nephropathy
- 3- Scleroderma
- 4- AL amyloid
- 5- AA amyloid

Answer & Comments

Answer: 5- AA amyloid

Nephrotic range proteinuria and renal failure in the context of a prolonged untreated inflammatory response suggests AA amyloid. Since circulating serum AA is the precursor of AA amyloid deposits, reduction of the precursor protein is the most rational approach at present for the management of amyloidosis.

Prevention of amyloidosis is preferable to treatment of the established disease. Thus aggressive therapy of rheumatic diseases such as RA and JCA is desirable in this context.



[ Q: 259 ] MRCPass - Rheumatology

A 45 year old woman presents with confusion. On examination she was pyrexial,

had livedo reticularis had a blood pressure of 190/100 mmHg.

Examination of the abdomen revealed left flank tenderness.

Investigations revealed:

Hb 13.9 g/dL

white cell count  $6.5 \times 10^9/L$

platelet count  $110 \times 10^9/L$

serum creatinine 95  $\mu\text{mol/L}$

urine dipstick analysis: blood +++, protein +

*Which one of the following tests is likely to be positive?*

- 1- Anti Ro antibody
- 2- Anti GBM antibody
- 3- Anti cardiolipin antibody
- 4- ASOT
- 5- ANCA

Answer & Comments

Answer: 3- Anti cardiolipin antibody

The diagnosis is SLE and antiphospholipid syndrome. The presentation would be consistent with renal vein thrombosis (flank pain and proteinuria). Antiphospholipid syndrome (APS) is a disorder characterized by recurrent venous or arterial thrombosis and/or fetal losses associated with typical laboratory abnormalities. These include persistently elevated levels of antibodies directed against membrane anionic phospholipids (ie, anticardiolipin [aCL] antibody, antiphosphatidylserine).

Vascular thrombosis - DVT, MI, CVA or miscarriages may occur. Other features are nonthrombotic neurologic symptoms, such as migraine headaches, chorea, seizures, transverse myelitis, Guillain-Barré syndrome, thrombocytopenia or hemolytic anemia, Livedo reticularis, Avascular necrosis of bone and Pulmonary hypertension.

Aspirin or warfarin is recommended for patients with thrombotic syndromes.



[ Q: 260 ] MRCPass - Rheumatology

A 60 year old lady has polyarthropathy due to Rheumatoid Arthritis.

*Which one of the following molecules plays a central role in its pathogenesis?*

- 1- IFN gamma
- 2- Interleukin 8
- 3- TNF alpha
- 4- Endotoxin
- 5- Nitric oxide

Answer & Comments

Answer: 3- TNF alpha

In the context of rheumatoid arthritis, TNF  $\alpha$  has involvement in cytokine regulation, cell recruitment, angiogenesis, and tissue destruction. Hence anti TNF alpha antibodies such as infliximab are used in therapy.



[ Q: 261 ] MRCPass - Rheumatology

A 50 year old woman presents with breathlessness. She has a 2 year history of Raynaud's. On examination, she had telangiectasia and tight skin around the mouth. Her investigations show an ESR of 70 mm/hr and positive anti-centromere antibodies.

*Which of the following is a typical late complication of this disorder?*

- 1- Renal hypertensive crisis
- 2- Lung malignancy
- 3- Pulmonary hypertension
- 4- Myositis
- 5- Mitral regurgitation

Answer & Comments

Answer: 3- Pulmonary hypertension

The diagnosis is CREST syndrome. Renal hypertensive crisis is more common in diffuse systemic sclerosis and pulmonary hypertension is more common in limited cutaneous scleroderma.



[ Q: 262 ] MRCPass - Rheumatology

An 18 year old girl developed pulmonary haemorrhage and subsequent acute renal failure requiring dialysis. A renal biopsy shows crescentic glomerulonephritis.

*Which one of the following antibodies is likely to be present?*

- 1- Anti mitochondrial
- 2- Anti centromere
- 3- Anti nuclear
- 4- Anti phospholipid
- 5- Anti myeloperoxidase

Answer & Comments

Answer: 5- Anti myeloperoxidase

This patient manifests a pulmonary renal syndrome which is commonly due to an ANCA positive vasculitis. P ANCA which correlates with antmyeloperoxidase (MPO) antibodies, is highly sensitive and specific towards rapidly progressive glomerulonephritis and haemorrhagic alveolar capillaritis. Less commonly this could be due to Goodpasture's syndrome (anti GBM antibodies).



[ Q: 263 ] MRCPass - Rheumatology

A 65 year old man with chronic leukaemia presents with symptoms of gout. He was given Allopurinol.

*How does Allopurinol prevent accumulation of uric acid?*

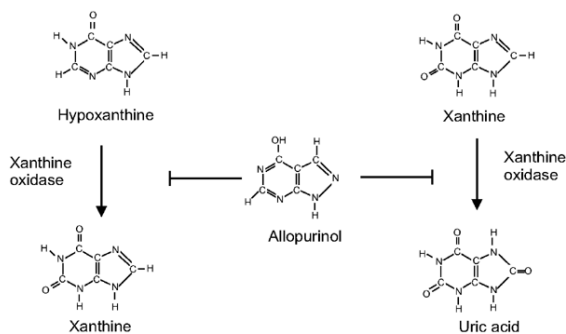
- 1- By increasing uric acid metabolism
- 2- By enhancing its solubility
- 3- By inhibiting purine synthesis
- 4- By inhibiting pyrimidine synthesis

## 5- By inhibiting xanthine oxidase

## Answer &amp; Comments

**Answer:** 5- By inhibiting xanthine oxidase

Allopurinol inhibits xanthine oxidase, the enzyme that catalyzes the conversion of hypoxanthine to xanthine and of xanthine to uric acid. Hypoxanthine and xanthine are breakdown products of purine.



## [ Q: 264 ] MRCPass - Rheumatology

A 32 year old woman in the third trimester of her second pregnancy develops acute onset right groin pain.

On examination, all right hip movements are painful and she is tender in the right groin and over the greater trochanter. Lumbar spine examination shows an exaggerated lordosis only and there are no neurological lower limb deficits. Initial plain films of the hip are normal.

*The most likely diagnosis is :*

- 1- Septic arthritis
- 2- Hip dislocation
- 3- Avascular necrosis of the hip
- 4- Pregnancy exacerbating osteoarthritis
- 5- Pseudogout

## Answer &amp; Comments

**Answer:** 3- Avascular necrosis of the hip

This is a classical presentation of avascular necrosis of the femoral head in pregnancy.

Transient osteoporosis of the hip is also a recognised cause of hip pain in pregnancy, but plain radiographs would usually show marked unilateral osteopenia of the femoral head and acetabulum.

The arterial supply to the femoral head is easily damaged with any femoral neck fracture displacement.

Atraumatic causes of this are : Alcohol abuse, Chemotherapy, Chronic liver disease, Corticosteroids, Gaucher disease, Gout, Hemoglobinopathy (eg, sickle cell disease), Metabolic bone disease, Pregnancy, Radiation, Systemic lupus erythematosus, Vasculitis.



## [ Q: 265 ] MRCPass - Rheumatology

A 55 year old woman with psoriasis has significant joint pains.

*Which one of the following is effective in the treatment of psoriatic arthropathy?*

- 1- Codeine phosphate
- 2- Methotrexate
- 3- Beta interferon
- 4- Capcitabine
- 5- Buprenorphine

## Answer &amp; Comments

**Answer:** 2- Methotrexate

NSAIDs, sulphasalazine, methotrexate and TNF alpha antagonists are useful in psoriatic arthropathy.



## [ Q: 266 ] MRCPass - Rheumatology

A 65 year old woman attends has a 12 week history of lethargy, neck pains and weakness in the lower limbs.

She has a long history of lower back pains and generalised osteoarthritis. She takes diclofenac regularly.

On examination there is wasting of her upper limbs. Tone mildly increased in the lower

limbs. There is inversion of right supinator reflex, triceps, knee and ankle jerks are brisk bilaterally. Right plantar is extensor and the left is flexor.

Investigations show :

Hb 11.6 g/l

WCC  $8 \times 10^9/L$

Plat  $160 \times 10^9/L$

ESR 73 mm

CRP 12 mg/l

Na 138 mmol/l

K 4.4 mmol/l

Urea 5.8 mmol/l

Creatinine 95  $\mu\text{mol/l}$

Protein 83 g/l

Albumin 32 g/l

Ca 2.33 mmol/l

X ray cervical spine shows extensive osteophytes

*What is the likely diagnosis?*

- 1- Ankylosing spondylitis
- 2- Polymyalgia rheumatica
- 3- Cervical spondyloarthropathy
- 4- Multiple sclerosis
- 5- Syringomyelia

#### Answer & Comments

Answer: 3- Cervical spondyloarthropathy

Cervical spondylosis may present with associated pains in the neck radiating down the arms and back. There may be upper motor neuron signs in the upper and lower limbs.



[ Q: 267 ] MRCPass - Rheumatology

A 70 year man presents with right foot drop, hand numbness, fevers, malaise, weight loss, polymyalgia and diffuse joint pains for 2 months.

On examination, he appears unwell and has a temperature of  $38^{\circ}\text{C}$ .

Investigations reveal:

Hb 8.5 g/dL

erythrocyte sedimentation rate 95 mm/hr

serum creatinine  $220 \mu\text{mol/L}$

urine analysis: blood ++

urine microscopy: white cells & red cell casts seen

*Which one of the following is the likely diagnosis?*

- 1- Multiple myeloma
- 2- Antiphospholipid syndrome
- 3- Takayasu's arteritis
- 4- Polyarteritis nodosa
- 5- Goodpasture's syndrome

#### Answer & Comments

Answer: 4- Polyarteritis nodosa

This patient has a mononeuritis multiplex, fever and nephritic renal involvement suggesting a diagnosis of polyarteritis nodosa. PAN causes transmural necrotizing inflammation of small-sized or medium-sized muscular arteries. PAN is a rare condition.

Although the causes are unknown in most cases, there is an association with: Hep B virus, Hep C virus, HIV, Cytomegalovirus, Parvovirus B19 and Human T-lymphotrophic virus.

Approximately 20% of patients with classic PAN are positive for P-ANCA. Steroids (prednisolone) and immunosuppressive (cyclophosphamide) medications form the backbone of therapy. Plasma exchange is useful as a second-line treatment in PAN refractory to conventional therapy.





## [ Q: 268 ] MRCPass - Respiratory

A man presents with symptoms suggestive of a pneumonia. The CXR confirms this.

*Which of the following features suggests poor prognosis?*

- 1- Respiratory rate of 20
- 2- Temperature 38°C
- 3- Age 60
- 4- Urea of 10
- 5- MTS score of 9 out of 10

## Answer &amp; Comments

Answer: 4- Urea of 10

The CURB-65 score for poor prognosis in pneumonia are :

- confusion (defined as an AMT of 8 or less)
- urea greater than 7 mmol/l
- respiratory rate of 30 breaths per minute or greater
- blood pressure less than 90 systolic or diastolic blood pressure 60 or less
- age 65 or older



## [ Q: 269 ] MRCPass - Respiratory

A 60 year old lady presents with shortness of breath. A chest X ray confirms that she has a right sided pleural effusion. An Aspireate was taken and the sample was sent for several tests.

*Which one of the following is an indication for a chest drain?*

- 1- High protein
- 2- Low glucose
- 3- Low LDH
- 4- PH <7.2
- 5- Blood stains

## Answer &amp; Comments

Answer: 4- PH <7.2

Although a high protein also points towards an exudates, a low pH is the best marker of infection in an effusion requiring chest drain insertion.



## [ Q: 270 ] MRCPass - Respiratory

A 75 year old heavy smoker presents to the hospital with breathlessness, wheezing and a cough with yellow sputum.

He has the following investigations: Hb 18 g/dl, WCC  $12 \times 10^9/L$ , ABGs show a pH of 7.38,  $pO_2$  of 8.5 kPa,  $pCO_2$  of 7 kPa.

*What is the diagnosis?*

- 1- Bronchiectasis
- 2- Chronic obstructive pulmonary disease
- 3- Mesothelioma
- 4- Tuberculosis
- 5- Cryptogenic fibrosing alveolitis

## Answer &amp; Comments

Answer: 2- Chronic obstructive pulmonary disease

This patient has type II respiratory failure, without an acidosis, suggesting chronic  $CO_2$  retention. He also is a heavy smoker and has polycythaemia, making COPD most likely.



## [ Q: 271 ] MRCPass - Respiratory

A 45 year old man presents with a chronic cough productive of copious amounts of thick yellow sputum and occasional haemoptysis. He also has had multiple episodes of chest infection. On examination he has clubbing and on auscultation over the lung bases, coarse crepitations are heard.

*Which investigation will reveal the diagnosis?*

- 1- Chromosome testing
- 2- Bronchoscopy

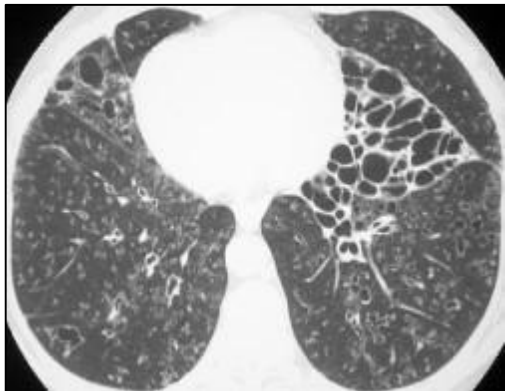


- 3- Sweat test
- 4- Maxillary sinus x rays
- 5- High resolution CT

#### Answer & Comments

**Answer:** 5- High resolution CT

The diagnosis is bronchiectasis. HRCT is likely to show bronchial dilatation and wall thickening.



HRCT showing bronchiectasis



#### [ Q: 272 ] MRCPass - Respiratory

A 40 year old man has emphysema. He is found to have the SS phenotype.

*What is his alpha 1 antitrypsin level likely to be?*

- 1- 10%
- 2- 15%
- 3- 25%
- 4- 50%
- 5- 75%

#### Answer & Comments

**Answer:** 4- 50%

The normal genotype is MM and levels of enzyme is (100%). The relevant enzyme levels are MS (75%), MZ (55%), SS (50%) ZZ (15%).

Genotype	Prevalence %	Reduction AAT level (%)
MM	88	0
MS	7	20
MZ	4	40
SS	1	40
SZ	0.1	70
ZZ	0.03	90



#### [ Q: 273 ] MRCPass - Respiratory

A 70 year old man with known chronic obstructive pulmonary disease (COPD) is admitted with symptoms of worsening breathlessness and confusion. Following a dose of 200mg iv hydrocortisone and two doses of salbutamol and atrovent nebulisers, arterial blood gases were taken.

His arterial blood gases are as follows: pH 7.18, pO<sub>2</sub> 6.6 kPa, pCO<sub>2</sub> 12.0 kPa.

*What should be done next?*

- 1- Repeat dose of corticosteroids
- 2- Mechanical ventilation
- 3- 2 litres oxygen
- 4- Monteleukast
- 5- Magnesium infusion 2g

#### Answer & Comments

**Answer:** 2- Mechanical ventilation

This patient has type II respiratory failure with acidosis, and hence should be considered for ventilation, either straight away or with a trial of NIPPV beforehand.



#### [ Q: 274 ] MRCPass - Respiratory

A 40 year old woman has been breathless and is undergoing investigations for the cause. She has a previous history of being a smoker and has a dry cough as well. Her ABGs show a pO<sub>2</sub> of 9 kPa and pCO<sub>2</sub> of 5 kPa. Lung function tests show reduced vital capacity, reduced TLCO but increased KCO.

*What is the likely diagnosis?*

- 1- COPD
- 2- Bronchial obstruction from a tumour
- 3- Kyphoscoliosis
- 4- Obstructive sleep apnoea
- 5- Fibrosing alveolitis

#### Answer & Comments

**Answer:** 3- Kyphoscoliosis

In this scenario, the lung function indicates that the surface area for exchange are inadequate (low TLCO) hence suggesting that lung expansion is reduced. However, cardiac output is increased to compensate, and hence KCO is increased. Kyphoscoliosis would restrict lung expansion, or a neuromuscular disorder (eg spina bifida) could cause this.



#### [ Q: 275 ] MRCPass - Respiratory

A 50 year old woman is admitted with infective exacerbation of asthma. She responds to medical treatment but *Aspergillus fumigatus* is eventually cultured from her sputum.

Further investigations show serum total IgE level was elevated at 350 ng/ml (normal 40-180 ng/ml), RAST to *Aspergillus fumigatus* was class III, *Aspergillus fumigatus* precipitins are negative.

*What is the most appropriate management?*

- 1- No change in medication
- 2- High dose oral corticosteroids
- 3- CT scan of the chest
- 4- Chest X ray
- 5- Itraconazole

#### Answer & Comments

**Answer:** 1- No change in medication

With negative *Aspergillus fumigatus* precipitins and serum total IgE less than 1000

ng/ml, this patient is unlikely to have Allergic Bronchopulmonary Aspergillosis (ABPA).

Features which are found commonly in asthmatics without ABPA include:

Positive immediate skin reactivity to *Aspergillus fumigatus*, which is present in 20-30% of asthmatics Positive serum precipitins to *Aspergillus*, which occur in 10% of asthmatics without ABPA Recurrent mucoid impaction and atelectasis Peripheral blood eosinophilia and elevation of serum total IgE.



#### [ Q: 276 ] MRCPass - Respiratory

A 60 year old man presents with small amounts of haemoptysis and breathlessness. He does not have pleuritic chest pains and has normal oxygen saturations.

*In considering the potential diagnosis, haemoptysis can occur with which of the following diagnosis?*

- 1- Pulmonary fibrosis
- 2- Melanoma
- 3- Goitre
- 4- Thymoma
- 5- Aspergilloma

#### Answer & Comments

**Answer:** 5- Aspergilloma

Haemoptysis can be caused by pulmonary embolus, tuberculous infection, aspergilloma, bronchial carcinoma, Goodpasture's syndrome and Wegener's granulomatosis.



#### [ Q: 277 ] MRCPass - Respiratory

A 30 year old man gives a six-month history of worsening breathlessness and coughs up half a cupful of sputum daily. He was occasionally wheezy with viral illnesses as a young child, works in a factory and has

smoked 25 cigarettes per day for the last four years.

*The most likely diagnosis is:*

- 1- Lung carcinoma
- 2- Bronchiectasis
- 3- Asthma Asbestosis
- 4- Chronic obstructive pulmonary disease
- 5- Rheumatoid lung

#### Answer & Comments

Answer: 2- Bronchiectasis

Bronchiectasis is most likely due to the extensive amounts of sputum production. In a young person, cystic fibrosis and hypogammaglobulinaemia should be considered.



[ Q: 278 ] MRCPass - Respiratory

A 60 year old man has smoked for 10 years. He has a longstanding dry cough and expiratory wheeze.

Examination reveals scattered rhonchi and reduced lung expansion.

*The most likely diagnosis is:*

- 1- Asthma
- 2- Lung carcinoma
- 3- Chronic bronchitis
- 4- Bronchiectasis
- 5- Extrinsic allergic alveolitis

#### Answer & Comments

Answer: 3- Chronic bronchitis

The heavy smoking history and wheeze suggests chronic bronchitis.



[ Q: 279 ] MRCPass - Respiratory

A 14 year old boy develops red eye and rhinitis frequently during the start of the summer.

*What is the likely triggering agent?*

- 1- House dust mite
- 2- Grass pollen
- 3- Willow pollen
- 4- Isocyanates
- 5- Coal dust

#### Answer & Comments

Answer: 2- Grass pollen

Grass pollen is released late May till August, and willow pollen is released from March till June. As the allergic rhinitis is triggered during the start of summer, this is most likely to be due to grass pollen.



[ Q: 280 ] MRCPass - Respiratory

A 65 year old man presents with breathlessness that has got gradually worse over three months. He has long-standing atrial fibrillation, for which he takes warfarin and amiodarone.

On examination his pulse is 100/min in AF, oxygen saturation was 90% on air. His JVP was not raised and he has fine bibasal crackles. Arterial blood gas saturation showed mild hypoxia and a pulmonary function test revealed a moderate restrictive picture.

*The most likely diagnosis is:*

- 1- Bronchiectasis
- 2- Pulmonary embolism
- 3- Pulmonary haemorrhage
- 4- Amiodarone induced interstitial lung disease
- 5- Congestive cardiac failure

#### Answer & Comments

Answer: 4- Amiodarone induced interstitial lung disease

The case scenario would fit amiodarone induced interstitial lung disease or pulmonary

fibrosis. This may take several months or years to develop. Lung function tests may show a restrictive picture with reduced transfer factor. A high resolution CT in this case is likely to show diffuse "ground glass" opacities or interlobular septal thickening.



[ Q: 281 ] MRCPass - Respiratory

A 65 year old man has been confirmed to have lung cancer.

*Which form of cancer has the worst prognosis?*

- 1- Small cell
- 2- Squamous cell
- 3- Adenocarcinoma
- 4- Large cell
- 5- Prostate metastasis

Answer & Comments

Answer: 1- Small cell

Small cell lung cancer has the worst prognosis out of all lung cancers and is rarely suitable for surgical resection. Even when diagnosed early the 2-year survival is in the order of 20-25%. The main form of therapy is chemotherapy.

Small cell cancer is associated with syndrome of inappropriate antidiuretic hormone (ADH) and squamous cell cancer is associated with paraneoplastic hypercalcaemia through increased parathyroid-related hormone. 75% of small cell cancers arise in the proximal airways.



[ Q: 282 ] MRCPass - Respiratory

A 22 year old female presents with a chest infection. She is unable to complete a sentence and her peak flow rate was 40% of her normal level. She is treated with high flow oxygen, nebulised bronchodilators and oral steroids but this is associated with little change in her condition.

*Which of the following treatments, given intravenously, would be the most appropriate for this patient?*

- 1- Aminophylline
- 2- Augmentin
- 3- Hydrocortisone
- 4- Magnesium
- 5- Salbutamol

Answer & Comments

Answer: 4- Magnesium

IV magnesium is recommended by the British Thoracic Society in severe exacerbation of asthma. A dose of 2g (8 mmol) is given as a bolus iv dose in the acute presentation period.



[ Q: 283 ] MRCPass - Respiratory

A 60 year man has been a smoker of 20 a day for 30 years. He has a cough and difficulty in breathing for 3 days which has worsened and he presents to hospital. He has home nebulisers but not home oxygen.

On examination, his oxygen saturations are 95%, blood pressure 110 / 60 mmHg and respiratory rate 32. He has diffuse wheezes and is using his respiratory muscles. Arterial blood gases done on 6 litres of oxygen show :

pH 7.25

pO<sub>2</sub> 16 kPa

pCO<sub>2</sub> 8.2 kPa

*What should be the next management step?*

- 1- Non invasive ventilation
- 2- Intravenous antibiotics
- 3- Intubation and ventilation
- 4- Reduce inspired oxygen concentration
- 5- Increase oxygen concentration

## Answer &amp; Comments

**Answer:** 4- Reduce inspired oxygen concentration

This man with Chronic Obstructive Pulmonary Disease (COPD) has blood gases showing type II respiratory failure with acidosis. He has been placed on 6 litres of oxygen, which is too much for a patient with severe COPD as the history of home nebuliser use suggests.

His respiratory drive is suppressed by too much oxygen inspired, and hence reduction to a lower concentration (e.g. 1 - 2 litres) to maintain a  $pO_2$  above 8.5 kPa is recommended.



## [ Q: 284 ] MRCPass - Respiratory

A 70 year woman has a history of dry cough for 2 months. She has lost 5 kg of weight over the 2 months. Her chest X ray shows a left apical shadowing. Blood tests reveal a raised white cell count of 16. She has not managed to cough up any sputum.

*Which test should be performed?*

- 1- CT scan of the chest
- 2- Serum ANCA
- 3- Ultrasound of the chest
- 4- Kveim test
- 5- Bronchoscopy

## Answer &amp; Comments

**Answer:** 5- Bronchoscopy

This patient is likely to have TB due to the apical shadowing. In a patient who is unable to expectorate sputum, bronchoscopy with lavage (send for AFB) should be performed to confirm the diagnosis.



## [ Q: 285 ] MRCPass - Respiratory

A 65 year old man with emphysema presented with increasing dyspnoea and left-sided pleuritic chest pain. A chest radiograph

reveals a left-sided pneumothorax with a lung edge measured 5 cm away from the chest wall.

*The most appropriate management of his condition is:*

- 1- Review with daily chest radiographs
- 2- Intercostal tube drainage
- 3- Refer to a respiratory outpatient clinic
- 4- CT chest
- 5- Simple aspiration

## Answer &amp; Comments

**Answer:** 2- Intercostal tube drainage

The lung edge measurement suggests a greater than 50% pneumothorax. A smaller pneumothorax may be amenable to aspiration. In the context of chronic underlying respiratory disease such as chronic obstructive pulmonary disorder and a large pneumothorax, patients are best managed by pleural drainage.



## [ Q: 286 ] MRCPass - Respiratory

A 70 year old man attends the hospital with a history of proximal muscle weakness. He also gives a history of cough of 12 weeks duration and complains of pain of the small joints of the hands. He has small haemorrhages in the nail folds, but is not clubbed. On examination of the chest he has bibasal crackles, and a chest radiograph reveals diffuse reticular infiltrates. Lung function tests confirm a restrictive pattern.

*What is the likely cause of his interstitial lung disease?*

- 1- SLE
- 2- Dermatomyositis
- 3- Ankylosing spondylitis
- 4- Cryptogenic fibrosing alveolitis
- 5- Amiodarone induced fibrosis

## Answer &amp; Comments

**Answer:** 2- Dermatomyositis

In polymyositis and dermatomyositis patients often develop proximal muscle weakness and of pain in the small joints of the fingers. They may have ragged cuticles and haemorrhages at the finger nail folds. Interstitial lung disease can occur. Underlying malignancy (lungs, ovaries, breasts and stomach) is present in 5% of cases.



## [ Q: 287 ] MRCPass - Respiratory

A 40 year old man is referred for investigation of the cause of chronic cough. He describes long standing sputum production which is streaked with blood. There is no fever or night sweats, and he does not smoke. However there is a family history of such symptoms. Chest X ray shows mild bilateral lower zone shadowing.

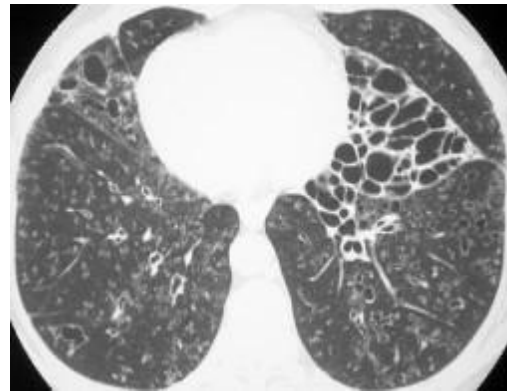
*Which is the most appropriate investigation?*

- 1- High resolution CT
- 2- Exercise tolerance test
- 3- Echocardiography
- 4- Bronchoscopy and biopsy
- 5- Serum precipitins

## Answer &amp; Comments

**Answer:** 1- High resolution CT

The likely diagnosis is bronchiectasis, and a family history is suggestive of cystic fibrosis or Kartagener's syndrome. HRCT will help to confirm the diagnosis, if changes such as dilated central tubular bronchi and mosaic oligemia were seen.



Bronchiectasis- Airway dilatation on the HRCT



## [ Q: 288 ] MRCPass - Respiratory

A 40 year old man has a 3 month history of cough and dyspnoea. He smokes 20 a day. There is no history of asbestos exposure.

His WBC count is  $24 \times 10^9/L$  with 70% neutrophils and  $3.0 \times 10^9/L$  (5%) eosinophils. IgE level is elevated.

He has decreased breath sounds corresponding to parenchymal infiltrates on the CXR.

*Which is the best test to confirm the diagnosis?*

- 1- Sputum for Acid Fast Bacilli
- 2- HIV test
- 3- Autoimmune screen
- 4- Aspergillus RAST
- 5- Stool for ova, cysts, parasites

## Answer &amp; Comments

**Answer:** 4- Aspergillus RAST

The condition described is Allergic Broncho Pulmonary Aspergillosis, which is commoner among asthmatics and cystic fibrosis patients. Eosinophilia and high IgE levels are suggestive of this condition. RAST test for antibodies towards Aspergillus confirms the diagnosis.





## [ Q: 289 ] MRCPass - Respiratory

A 45 yearold woman is admitted with a 2-day history of fever, rigors and breathlessness. She looks extremely unwell and is confused, cyanosed, has a respiratory rate of 24/min and a systolic blood pressure of 85 mmHg.

There is bronchial breathing at her right base, where a chest radiograph reveals consolidation.

*Which would be the most appropriate antibiotic regimen?*

- 1- Intravenous ceftazidime and intravenous gentamicin
- 2- Oral erythromycin
- 3- Intravenous cefotaxime and oral erythromycin
- 4- Intravenous amoxicillin and oral clarithromycin
- 5- Oral amoxicillin and oral clarithromycin

## Answer &amp; Comments

Answer: 3- Intravenous cefotaxime and oral erythromycin

Severe pneumonia as defined by the British Thoracic Society guidelines, is diagnosed when there are two of the following features: confusion, urea >7mmol/l, respiratory rate >30/min, and hypotension (SBP <90mmHg, DBP <60mmHg).

Appropriate treatment is with intravenous antimicrobials: cefuroxime 1.5g three times daily or cefotaxime 1g three times daily PLUS erythromycin 500 mg four times daily or clarithromycin 500mg twice daily.



## [ Q: 290 ] MRCPass - Respiratory

A 72 year old man presents with a history of worsening breathlessness and cough. His arterial blood gases show the following recordings when taken at room air:

pH 7.25

pO<sub>2</sub> 6.4kPa

pCO<sub>2</sub> 8.9 kPa

Bicarbonate 31mmol/L

*What is the most likely diagnosis?*

- 1- Acute exacerbation of chronic obstructive pulmonary disease
- 2- Obstructive sleep apnoea
- 3- Pulmonary oedema
- 4- Pulmonary embolus
- 5- Pulmonary fibrosis

## Answer &amp; Comments

Answer: 1- Acute exacerbation of chronic obstructive pulmonary disease

The blood gas result would be most compatible with a patient with severe COPD and chronic type 2 respiratory failure with an acute exacerbation (Hypoxia, respiratory acidosis with raised CO<sub>2</sub> and metabolic compensation).



## [ Q: 291 ] MRCPass - Respiratory

A 70 year old man presents with a chronic cough. He is a heavy smoker of over 40 cigarettes a day. CXR shows a peripheral right-sided lesion. A biopsy which was taken shows squamous cell carcinoma. No regional lymph nodes are involved. Lung function tests show a FEV<sub>1</sub> of less than 1.5 litres.

*The recommended treatment is:*

- 1- Chemotherapy
- 2- Radiotherapy
- 3- Lobectomy
- 4- Pneumectomy
- 5- Lung transplant

## Answer &amp; Comments

Answer: 2- Radiotherapy

Although surgical treatment is possible in non small cell lung carcinoma, a FEV<sub>1</sub> of less than 1.5 litres contraindicates surgery. Hence, radiotherapy is recommended.



[ Q: 292 ] MRCPass - Respiratory

A 55 year old gentleman has pickwickian syndrome. He has poor exercise tolerance of 50 yards and often feels lethargic at work.

*Which of the following is the best investigation?*

- 1- Echocardiography to assess cor pulmonale
- 2- CT scan of the chest
- 3- Blood gas
- 4- Sleep study
- 5- Exercise tolerance test

Answer & Comments

Answer: 4- Sleep study

The diagnosis of obstructive sleep apnoea can be made with a sleep study (polysomnography). In sleep apnoea, there is gross obesity and airways obstruction, occasionally leading to type II respiratory failure. During the sleep study, > 10 episodes of apneic episodes (pauses in breathing) satisfies the criteria for obstructive sleep apnoea.



[ Q: 293 ] MRCPass - Respiratory

A 60 year old man smoker of 35 pack years presents with a 6 month history of shortness of breath. His past medical history includes diabetes and cervical spondylosis.

Spirometry shows FEV<sub>1</sub> of 1 litre - 65% predicted

FVC 1.03 litres - 57% predicted

FEV<sub>1</sub>/FVC ratio of 95.

*How would you interpret the spirometry results?*

- 1- Normal
- 2- Mixed defect
- 3- Obstructive defect
- 4- Restrictive defect
- 5- Suggestive of haemorrhage

Answer & Comments

Answer: 4- Restrictive defect

Reduced FEV<sub>1</sub> and FVC with normal FEV<sub>1</sub> ratio is compatible with restrictive defect.

Causes of restrictive lung defect are :

- neurogenic or psychogenic causes
- abnormalities of the thoracic wall
- stiff parenchyma (pulmonary fibrosis)
- loss of lung tissue, e.g. pneumonectomy
- displacement



[ Q: 294 ] MRCPass - Respiratory

A 65 year old man has worsening breathlessness. He has a past medical history of arthritis and palpitations.

On admission his oxygen saturations were 90% on air.

ABGs show pO<sub>2</sub> 9 kPa. pCO<sub>2</sub> 3.5 kPa, pH 7.36.

His chest X ray shows patchy shadowing in both lung peripheries.

*Which one of the following drugs is likely to be responsible?*

- 1- Codeine
- 2- Tramadol
- 3- Simvastatin
- 4- Amiodarone
- 5- Prednisolone

## Answer &amp; Comments

**Answer:** 4- Amiodarone

The hypoxia and X ray changes suggest pulmonary fibrosis. Out of the list of medications, amiodarone is the most likely candidate. A lung function test with transfer factor and also high resolution CT will help to confirm the diagnosis of amiodarone related pulmonary fibrosis.



## [ Q: 295 ] MRCPass - Respiratory

A 65 year old man has been diagnosed with chronic obstructive pulmonary disease (COPD). Spirometry confirms severe COPD with a FEV<sub>1</sub> of less than 25% predicted. In the last year he has been admitted to hospital on 6 occasions with COPD exacerbation.

*Which one of the following can help to reduce hospital admissions?*

- 1- Tiotropium
- 2- Monteleukast
- 3- Oral theophyllines
- 4- Salmeterol
- 5- Hydrocortisone

## Answer &amp; Comments

**Answer:** 1- Tiotropium

Severe COPD is diagnosed if the FEV<sub>1</sub> is less or equal to 30% predicted. Studies have shown that patients treated with long acting anticholinergic (e.g. tiotropium) have fewer exacerbations per year.



## [ Q: 296 ] MRCPass - Respiratory

An 13 year old male has recent onset breathlessness. He has a history of wheezing particularly during the summer when the pollen count is high.

*Which of these tests would help to confirm the diagnosis?*

- 1- Trial of inhaled corticosteroids
- 2- Trial of anticholinergics
- 3- Serial peak flow measurements
- 4- Lung function tests
- 5- Chest X ray

## Answer &amp; Comments

**Answer:** 3- Serial peak flow measurements

The history of wheezing during pollen exposure suggests asthma. The best diagnostic test for asthma would be demonstration of variable airways obstruction with serial peak flow measurements. Asthmatic patients with exacerbation will demonstrate peak flows lower than their predicted peak flow, and also a morning dip. There is also reversibility if a bronchodilator (e.g. salbutamol) is administered.



## [ Q: 297 ] MRCPass - Respiratory

A 27 year old man presents with sudden onset left sided pleuritic chest pain and breathlessness.

On examination he is distressed, tachypnoeic and has tracheal displacement to the right together with a hyper-resonant percussion note on the left side. There were no breath sounds on the left. Chest x ray shows a < 2 cm left sided pneumothorax.

*What is the best management procedure?*

- 1- High dose oxygen
- 2- Intercostal drainage tube
- 3- Chemical pleurodesis
- 4- Aspiration of pneumothorax
- 5- Repeat chest x ray in 6 hours

## Answer &amp; Comments

**Answer:** 4- Aspiration of pneumothorax

Treatment of a pneumothorax of < 2 cm margin would be initial aspiration.

This is less painful, leads to a shorter duration of admission, reduces the need for pleurectomy.



[ Q: 298 ] MRCPass - Respiratory

A 65 year old lady presents with weight loss and haemoptysis and is admitted to hospital. She has been a heavy smoker for 25 years. A Chest X ray shows a mass in the right upper lobe.

*Which is the best test to investigate at present?*

- 1- Sputum cytology
- 2- CT scan of the lung
- 3- Transbronchial biopsy
- 4- Lymph node biopsy
- 5- Pleural biopsy

Answer & Comments

Answer: 1- Sputum cytology

The mass seen on the CXR is likely to be a malignancy in view of the history of smoking, haemoptysis and weight loss. The initial test should be sputum cytology, as the diagnosis can be confirmed most easily. Staging CT scans can then be done to guide further management after this.



[ Q: 299 ] MRCPass - Respiratory

A 70 year old man has a diagnosis of non small cell lung tumour, and has completed a set of investigations.

*Which one of the following is a contraindication to lung surgery?*

- 1- FEV<sub>1</sub> of 1.7 L (50% predicted)
- 2- Horner's syndrome
- 3- History of myocardial infarction
- 4- Hypercalcaemia
- 5- Neuropathy affecting lower limbs

Answer & Comments

Answer: 2- Horner's syndrome

An FEV<sub>1</sub> of < 1.1 L is a contraindication for most cardiothoracic surgical procedures. A malignant pleural effusion, distant metastases, contralateral mediastinal lymph node spread, vocal cord paralysis, phrenic nerve paralysis, Horner's syndrome, and SVC syndrome are contraindications to surgery in lung cancer.



Left sided Horner's



[ Q: 300 ] MRCPass - Respiratory

A 20 year old male presents with breathlessness and wheezing.

*Which of the following is most likely to suggest asthma?*

- 1- Increased serum IgE
- 2- Wheezing induced by smoking
- 3- Obstructive picture in the lung function tests
- 4- Response to prednisolone
- 5- Diurnal PEFR variation > 20%

Answer & Comments

Answer: 5- Diurnal PEFR variation > 20%

In asthma, diurnal PEFR variability is due to various degrees of bronchial hyperreactivity. This is the best indicator of likely asthma. A raised IgE indicates atopy but is not diagnostic of asthma.



## [ Q: 301 ] MRCPass - Respiratory

A 70 year old patient with COPD presents with cough and breathlessness which has worsened over 2 months.

On admission, he has the following arterial blood gas results.

pH 7.32,  $pO_2$  7 kPa,  $pCO_2$  8 kPa,  $HCO_3^-$  34 mmol/l, Base Excess -1.

*Which one of the following biochemical states fits best?*

- 1- Chronic respiratory acidosis
- 2- Chronic respiratory alkalosis
- 3- Chronic metabolic acidosis
- 4- Chronic metabolic alkalosis
- 5- Acute metabolic acidosis

## Answer &amp; Comments

Answer: 1- Chronic respiratory acidosis

There is a mild respiratory acidosis ( $pH < 7.35$  and  $pCO_2 > 6$ ) and base excess is also not elevated (in this case only -1). There is metabolic compensation, as indicated by a high bicarbonate ( $>30$ ). The patient's history of COPD suggests that he has chronic hypoxia and chronic  $CO_2$  retention, hence causing the picture of chronic respiratory acidosis.



## [ Q: 302 ] MRCPass - Respiratory

A breathless 35 year old woman has the following lung function tests:

$FEV_1$  1.2 L (65%)

FVC 1.4 L (60%)

$FEV_1/FVC$  ratio = 82% predicted

TLC = 65% predicted

RV = 60% predicted

TLCO = 57% predicted

KCO = 105% predicted

*What is the most likely diagnosis?*

- 1- COPD

2- Bronchiectasis

3- Cystic fibrosis

4- Scoliosis

5- Pneumonia

## Answer &amp; Comments

Answer: 4- Scoliosis

The lung function tests show a significant restrictive defect. Only kyphoscoliosis or a pneumonitis may fit this picture but given the normal/high KCO (i.e. after correcting for alveolar volumes), the most likely answer is kyphoscoliosis as the gas exchange after correcting for the alveolar volume is high.



## [ Q: 303 ] MRCPass - Respiratory

A 70 year old man presented with shortness of breath. On examination, he had the signs of a large right-sided pleural effusion.

Investigations revealed: Pleural fluid analysis - protein 65 g/L

*What is the most likely cause?*

- 1- Congestive cardiac failure
- 2- Nephrotic syndrome
- 3- Non specific pericarditis
- 4- Liver cirrhosis
- 5- Mesothelioma

## Answer &amp; Comments

Answer: 5- Mesothelioma

It is a case of exudative pleural effusion (protein  $>30$  g/l). Mesothelioma is the most likely cause in this case. Other causes are: malignancies, infection, autoimmune conditions.



## [ Q: 304 ] MRCPass - Respiratory

A 75 year old man with COPD is on long-term oxygen therapy (LTOT). He complains of persistent leg swelling during a routine review.

His ABG on a supplemental oxygen flow rate of 2 l/min, shows:

pH of 7.35, pCO<sub>2</sub> of 5.7kPa, pO<sub>2</sub> of 7.8kPa and HCO<sub>3</sub> of 28 mmHg

*What should be done?*

- 1- CXR
- 2- Overnight oxygen saturation monitoring
- 3- Echocardiogram
- 4- Repeat ABG on air
- 5- CT scan of the chest

## Answer &amp; Comments

Answer: 2- Overnight oxygen saturation monitoring

The presence of persistent oedema or secondary polycythaemia suggests that the correction of overnight SaO<sub>2</sub> may be inadequate. Nocturnal hypoxaemia may be evident during an overnight SaO<sub>2</sub> monitoring.



## [ Q: 305 ] MRCPass - Respiratory

A 50 year man presents with a six month history of cough and breathlessness. On examination he has clubbing and there are bilateral fine inspiratory crackles in the bases of his lungs.

A chest X ray reveals bilateral basal shadowing in the lung fields. His blood gases reveal hypoxia with a pO<sub>2</sub> of 9 kPa.

*What is the best investigation to confirm a diagnosis?*

- 1- Lung function tests
- 2- Transbronchial biopsy
- 3- Serum ACE level
- 4- High resolution CT of the chest

- 5- Serum precipitins

## Answer &amp; Comments

Answer: 4- High resolution CT of the chest

The diagnosis is likely to be pulmonary fibrosis. The signs clubbing and inspiratory crepitations suggest cryptogenic fibrosing alveolitis. High resolution CT would show reticular opacities or honeycomb changes if there is pulmonary fibrosis. HRCT of the chest shows basilar ground glass opacities as well as linear and reticular opacities



HRCT of the chest showing basilar ground glass opacities as well as linear and reticular opacities consistent with ~Pulmonary Fibrosis



## [ Q: 306 ] MRCPass - Respiratory

A 40 year old man presented with history of recurrent Haemoptysis. He has previously been treated for tuberculosis. Chest x ray showed a rounded soft tissue mass is seen within a cavity in the right upper lobe with an air crescent.

*What is the diagnosis?*

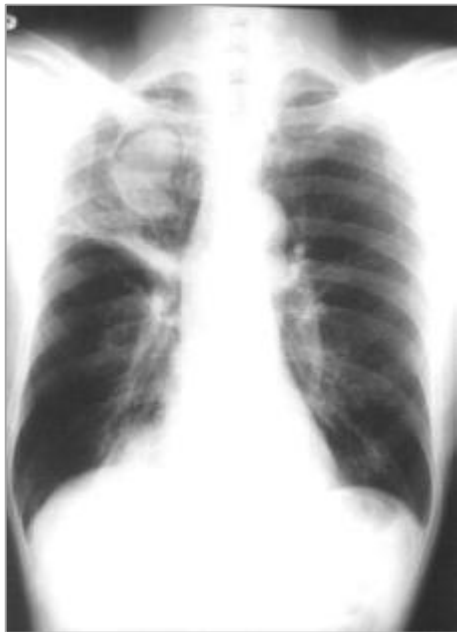
- 1- Chlamydia pneumonia
- 2- Caplan's syndrome
- 3- Extrinsic allergic alveolitis
- 4- Aspergilloma
- 5- Legionella infection



## Answer &amp; Comments

**Answer:** 4- Aspergilloma

Aspergillomas are masses of fungal mycelia that grow in preexisting lung cavities. Haemoptysis is a common symptom. They may require treatment with either anti-fungals or excision surgery if large. They are not associated with bronchiectasis (unlike allergic bronchopulmonary aspergillosis).



Aspergilloma



## [ Q: 307 ] MRCPass - Respiratory

A 55 year old man who had two episodes of hemorrhagic shock due to intestinal hemorrhage and post-operative secondary hemorrhage, was admitted to intensive care unit.

During the following weeks this was followed by bronchopneumonia with symptoms of sepsis persisting over several weeks. Chest x ray showed progressive changes in the interstitial tissues and he became more significantly hypoxic. Pulmonary capillary wedge pressure was 13 mmHg.

**What is the diagnosis?**

1- Congestive cardiac failure

2- Pneumocystis pneumonia

3- Pulmonary embolism

4- Adult respiratory distress syndrome

5- Community acquired pneumonia

## Answer &amp; Comments

**Answer:** 4- Adult respiratory distress syndrome

Respiratory distress syndrome is associated with profound hypoxia and increased vascular permeability (causing a V/Q mismatch). A normal PCWP differentiates the condition from pulmonary oedema. It does not respond to steroids.



ARDS



## [ Q: 308 ] MRCPass - Respiratory

A 40 year old man is HIV positive. He presents with breathlessness to the hospital. Chest XR shows bilateral interstitial lung markings. His oxygen levels desaturate upon mobilising.

**What should be commenced?**

1- Amoxycillin

2- Amoxycillin and clarithromycin

3- Iv co-trimoxazole

4- Doxycycline

5- Quadruple TB therapy

## Answer &amp; Comments

**Answer:** 3- Iv co-trimoxazole

The diagnosis is PCP. Silver staining rather than auramine should be done. Mortality is 10%. Iv co-trimoxazole or pentamidine can be used. Desaturation is typical with exercise in PCP. Other bacterial infections such as TB are more common among Africans.



## [ Q: 309 ] MRCPass - Respiratory

A 25 year old male with a 5 year long history of bronchial asthma, presented with worsening of asthma and fever of 20 days duration. The patient was well controlled on budesonide metered dose inhalations (400 µg/day) and rarely ever required to take salbutamol inhalations.

For the past 20 days, the patient was experiencing increasing breathlessness, fever, cough and production of mucoid expectoration for the past 20 days.

Examination a BP of 130/80 mmHg, and temperature 38.2°C.

Respiratory examination revealed bilateral widespread wheezes.

Investigations revealed- Hemoglobin- 12.4 g/dl, total white count –  $13 \times 10^9/L$ , Neutrophils  $6 (2-7.5) \times 10^9/L$ , Lymphocytes  $3 (1.3-3.5) \times 10^9/L$ , Eosinophils  $4 (0.04-0.44) \times 10^9/L$ . Serum IgE was 800 (0-380) kIU/ml.

The chest X-ray revealed pulmonary infiltrates in the right mid and lower zones.

**What is the likely diagnosis?**

- 1- Chronic obstructive pulmonary disease
- 2- Allergic broncho pulmonary aspergillosis
- 3- Pulmonary embolus
- 4- Extrinsic allergic alveolitis
- 5- Mesothelioma

## Answer &amp; Comments

**Answer:** 2- Allergic broncho pulmonary aspergillosis

ABPA usually occurs in association with asthma, but can occur in cystic fibrosis. It is treated with either oral or inhaled steroids. There is some evidence supporting anti-fungal agents like itraconazole, but amphotericin is not used. IgG and IgE are raised. In addition skin-testing or examination of sputum with fungal stains can be used.

Sputum culture is not often helpful. ABPA can lead to proximal bronchiectasis affecting the upper lobes if left untreated.



CXR showing pulmonary infiltrates on the right in ABPA



## [ Q: 310 ] MRCPass - Respiratory

A 16 year girl with known cystic fibrosis presents with cough and fevers. Chest X ray shows right lower zone consolidation.

**What antibiotic should be commenced?**

- 1- Amoxycillin
- 2- Metronidazole
- 3- Ceftazidime
- 4- Gentamicin
- 5- Piperacillin

## Answer &amp; Comments

**Answer:** 3- Ceftazidime

Patients with cystic fibrosis often have pseudomonas as a pathogenic infection. Ceftazidime and ciprofloxacin would cover the organism, and sometimes gentamicin or meropenem may be required due to resistance.



## [ Q: 311 ] MRCPass - Respiratory

A 50 year old asthmatic treated with high dose of inhaled corticosteroids develops a skin rash. His routine blood tests shows mild renal dysfunction and blood eosinophilia. His chest radiograph is normal.

*Which blood test should be done next?*

- 1- Total Ig E level
- 2- Antineutrophil cytoplasmic antibodies
- 3- Anti GBM antibody
- 4- Aspergillus fumigates precipitins
- 5- Anti-nuclear antibody (ANA)

## Answer &amp; Comments

**Answer:** 2- Antineutrophil cytoplasmic antibodies

Skin rash and renal dysfunction in an asthmatic suggests Churg- Strauss syndrome. Churg-Strauss syndrome, or allergic granulomatous angiitis, is a rare syndrome that affects small- to medium-sized arteries.

The presence of 4 or more criteria indicates a high likelihood of Churg-Strauss syndrome.

*These criteria are:*

- (1) asthma
- (2) eosinophilia of more than 10% in peripheral blood
- (3) paranasal sinusitis
- (4) pulmonary infiltrates (may be transient)

- (5) histological proof of vasculitis with extravascular eosinophils
- (6) mononeuritis multiplex or polyneuropathy.

Hypergammaglobulinemia, increased immunoglobulin E (IgE) levels, rheumatoid factor, and positive ANCA are usually present.



Pulmonary Infiltrates in Churg Strauss syndrome



## [ Q: 312 ] MRCPass - Respiratory

A 70 year old man with chronic obstructive lung disease presents with a cough, fevers and green sputum.

*What is the antibiotic of choice?*

- 1- Teichoplanin
- 2- Cefotaxime
- 3- Erythromycin
- 4- Amoxicillin
- 5- Ciprofloxacin

## Answer &amp; Comments

**Answer:** 4- Amoxicillin

In COPD, the 3 bacterial species account for most isolates are : Haemophilus influenzae, Streptococcus pneumoniae and Moraxella catarrhalis. First line treatment should be with amoxicillin, but if the patient is allergic, a tetracycline should be used.



## [ Q: 313 ] MRCPass - Respiratory

A 60 year old patient was involved in a car accident and sustained multiple fractures. He had been in ITU not long before there was a suspicion of severe respiratory distress syndrome.

*Which of these would help to confirm the diagnosis?*

- 1- CT scan of the chest
- 2- Oesophageal manometry
- 3- Pulmonary capillary wedge pressure
- 4- Requirement for ventilatory support
- 5- Arterial blood gases

## Answer &amp; Comments

Answer: 3- Pulmonary capillary wedge pressure

Respiratory distress syndrome can be caused by severe trauma, smoke inhalation, multiple blood transfusions, drowning and aspiration, and drugs such as salicylates and narcotics. Chest XR would show bilateral infiltrates, and the presentation mimics heart failure. Hence the best test would be PCWP, which would be normal (<18mmHg).



ARDS



## [ Q: 314 ] MRCPass - Respiratory

A 68 year old man with weight loss has a chest x ray which shows a cavitating lung

lesion. *Out of the following causes, which is most likely to cause a cavitating lung lesion?*

- 1- Mesothelioma
- 2- Small cell lung carcinoma
- 3- Squamous cell lung carcinoma
- 4- Adenocarcinoma of the lung
- 5- Large cell carcinoma of the lung

## Answer &amp; Comments

Answer: 3- Squamous cell lung carcinoma

Squamous cell carcinoma accounts for approximately one-third of all cases of bronchogenic carcinomas.

Squamous cell carcinomas tend to form firm, nonencapsulated, sharply circumscribed masses located in the main, lobar or segmental bronchi. Larger tumors often outgrow their vascular supply and may have central areas of hemorrhage, necrosis or cavitation.



A cavitating carcinomatous lung lesion



## [ Q: 315 ] MRCPass - Respiratory

A 45 year man has a long history of productive cough. He had complained of frequent chest infections.

Examination reveals bilateral inspiratory crackles in the bases of the lungs and clubbing of the fingers.

*Which of following treatments is likely to reduce the frequency of exacerbations?*

- 1- Prophylactic antibiotics
- 2- Inhaled corticosteroids
- 3- Oral corticosteroids
- 4- Postural drainage
- 5- Lung transplant

#### Answer & Comments

**Answer:** 4- Postural drainage

The patient has bronchiectasis, in which the common complication is difficulty expectorating, postural drainage of secretions is helpful.



#### [ Q: 316 ] MRCPass - Respiratory

A 60 year old man, ex-smoker (20 pack-years), was admitted to the hospital because of a prolonged fever of up to 38.5°C over a period of 10 days, associated with a progressively worsening shortness of breath, a nonproductive cough, weakness, and fatigue.

The chest radiograph, showed consolidations at the base of both lungs, prominent interstitial markings in the middle lung fields, and hazy infiltrates in the right upper lung field.

A bronchoscopy was done and BAL fluid analysis showed alveolitis with macrophages of 65%, lymphocytes of 25%, and neutrophils of 10%.

*Which drug is most likely to be responsible?*

- 1- Sulphasalazine
- 2- Penicillamine
- 3- Gold
- 4- Methotrexate
- 5- Azathioprine

#### Answer & Comments

**Answer:** 4- Methotrexate

The diagnosis is interstitial pneumonitis. Methotrexate is associated with interstitial pneumonitis. This is rare but a serious complication. Diagnosis is based on the clinical setting, clinical manifestations, radiographic abnormalities, bronchoalveolar lavage (BAL), and lung histology.



#### [ Q: 317 ] MRCPass - Respiratory

A 40 year old woman has a history of cough with copious phlegm with intermittent haemoptysis. She also gets recurrent chest infections and has a long history of joint pains. She is on non-steroidal anti-inflammatory drugs.

Her chest radiograph shows linear radiolucencies at both bases. A high-resolution computed tomography scan (HRCT) of the chest confirms bronchiectasis.

*What is the likely cause?*

- 1- Old tuberculosis
- 2- Hypogammaglobulinaemia
- 3- Rheumatoid arthritis
- 4- Cystic fibrosis
- 5- Kartagener's syndrome

#### Answer & Comments

**Answer:** 3- Rheumatoid arthritis

The case scenario suggests rheumatoid arthritis. 4 % of patients with rheumatoid arthritis develop bronchiectasis. Other causes are chronic infection (TB, measles, whooping cough etc), foreign body aspiration, hypogammaglobulinaemia, Kartagener's syndrome, Young's syndrome, cystic fibrosis, allergic bronchopulmonary aspergillosis.



#### [ Q: 318 ] MRCPass - Respiratory

A 35 year old lady has a headache, cough and myalgia.

On examination, she has a pyrexia and scattered crackles bilaterally on auscultation

of the chest. Rapid cold agglutinins was positive.

*What is the likely diagnosis?*

- 1- Tuberculosis
- 2- Staphylococcal pneumonia
- 3- Streptococcal pneumonia
- 4- Mycoplasma pneumonia
- 5- Legionella pneumonia

#### Answer & Comments

**Answer:** 4- Mycoplasma pneumonia

Mycoplasma pneumonia is the commonest atypical pneumonia.

Approximately 15% of pneumonias in adults are due to Mycoplasma pneumoniae. Transmission occurs from person to person by infected droplets. The incubation period is 9-21 days. The incidence is higher during the winter months. Fever, chills, cough and headache are early symptoms. Dyspnoea, chest pain and haemoptysis are rare.

Small pleural effusions may occur but are rare. Cold agglutinins are usually present in a titre greater than 1:32.



#### [ Q: 319 ] MRCPass - Respiratory

A 32 year old man is admitted to hospital with a history of breathlessness of 4-6 weeks duration. He initially had flu-like symptoms and was treated by his doctor with a 5-day course of amoxicillin. However, he then started coughing up blood, leading to urgent referral.

On examination he was dyspnoeic at rest, with bilateral crackles on auscultation of the lungs.

Investigation revealed anaemia and impaired renal function (creatinine 250 micromol/l). Pulmonary function tests were normal apart from an abnormally high diffusion factor. Urine dipstick testing showed the presence of red blood cells.

*What is the most likely diagnosis?*

- 1- Goodpasture's syndrome
- 2- Farmer's lung
- 3- Invasive Aspergillosis
- 4- Extrinsic allergic alveolitis
- 5- Chronic eosinophilic pneumonia

#### Answer & Comments

**Answer:** 1- Goodpasture's syndrome

The clinical picture of pulmonary and renal involvement is typical of Goodpasture's syndrome. The condition is due to the presence of circulating anti-glomerular basement membrane antibodies (anti-GBM antibodies). Other causes of pulmonary haemorrhage and renal failure include Wegener's granulomatosis, microscopic polyangiitis and systemic lupus erythematosus (SLE).



#### [ Q: 320 ] MRCPass - Respiratory

A 40 year old lady presents with breathlessness, hyperventilation and tachycardia. She has a temperature of 38°C. Over the last 5 days she had been deteriorating with a cough and fever despite a course of oral antibiotics, but her partner mentions that she has become much worse over the last day.

WCC is  $18 \times 10^9 /l$

CRP is 220 mg/l

pO<sub>2</sub> is 6.5 kPa despite high flow O<sub>2</sub>

Pulmonary wedge pressure is 16mmHg

The chest X-ray shows bilateral interstitial lung shadowing.

*What is the likely diagnosis?*

- 1- Pulmonary embolus
- 2- Pneumothorax
- 3- Severe pulmonary fibrosis
- 4- Pulmonary oedema



## 5- Adult respiratory distress syndrome

## Answer &amp; Comments

Answer: 5- Adult respiratory distress syndrome

ARDS can be precipitated by severe infection, aspiration and illicit drug use. The main differential is pulmonary oedema when the X-ray shows bilateral interstitial lung field shadowing. Pulmonary capillary wedge pressure of < 19mmHg effectively excludes left ventricular failure.



## [ Q: 321 ] MRCPass - Respiratory

A 30 year old man with bronchial asthma was admitted to hospital for reassessment of his recurring dry cough, chest tightness and wheezing.

Investigations show:

Neutrophils  $6 (2-7.5) \times 10^9/L$

Lymphocytes  $3 (1.3-3.5) \times 10^9/L$

Eosinophils  $9 (0.04-0.44) \times 10^9/L$

CXR shows reticulonodular shadowing

Investigations to look for causes of the eosinophilia (e.g., parasitosis, immunodeficiency and malignant disease) included stool microscopy, tumour marker assays (for carcinoembryonic antigen and cancer antigen (CA) 125, CA 19-9, CA 15-3 and CA 72-4), mammography, gastroduodenoscopy, bronchoscopy,

abdominopelvic ultrasonography, and vaginal and pelvic examination; all yielded normal findings.

Pulmonary function tests revealed a mild obstructive and moderate restrictive pattern [FEV<sub>1</sub>] 46%, [FVC] 55%, ratio of FEV<sub>1</sub> to FVC 72, peak expiratory flow 53%, [DLCO] 46%.

*What is the likely diagnosis?*

1- Tuberculosis

2- Loeffler's syndrome

3- Sarcoidosis

4- Pulmonary embolism

5- Wegener's granulomatosis

## Answer &amp; Comments

Answer: 2- Loeffler's syndrome

Hypereosinophilic syndrome is a rare condition where there is an idiopathic eosinophil count of  $> 15 \times 10^9/dl$ .

It is associated with Loeffler's syndrome which is a transient pulmonary reaction with nodular or reticular shadowing (diffuse, fanshaped shadowing) on chest radiology and eosinophilia.

Hypereosinophilic syndrome generally affects young men ages 20-50. Thrombotic tendency, neurological involvement (loss of intellect, depressed mood and poor coordination) and restrictive cardiomyopathy occur. There is response to steroids.

The lung involvement results in nocturnal cough, productive sputum, wheezing and dyspnea, which raises the

suspicion of bronchial hyperreactivity. Patients may be misdiagnosed as having asthma. However, pulmonary function tests typically reveal no airflow limitation.



## [ Q: 322 ] MRCPass - Respiratory

A 40 year old man has a history of long standing cough with sputum production. He also has recurrent episodes of chest infections and sinusitis. He is married but has been unsuccessful in having children. He also has hearing difficulty.

*Which one of the following is likely?*

- 1- Hypogammaglobulinaemia
- 2- Alpha 1 antitrypsin deficiency
- 3- Defect in CFTR gene
- 4- Kartagener's syndrome
- 5- Asthma variant

## Answer &amp; Comments

Answer: 4- Kartagener's syndrome

Kartagener's syndrome is hereditary. It comprises a triad of: situs inversus (transposition) of the viscera, abnormal frontal sinuses producing sinusitis and bronchiectasis, and immobility of the cilia.

Symptoms and signs are dyspnoea, productive cough, recurrent respiratory infections, rheumatoid arthritis, renal abnormalities, malformations of renal vessels and anomalous subclavian artery. There is also otitis media, nasal speech, conductive hearing loss, anosmia or clubbing.



Dextrocardia in Kartagener's syndrome



## [ Q: 323 ] MRCPass - Respiratory

A 40 year old woman is referred with a history of red, painful legs of 3 weeks duration that have not responded to a course of flucloxacillin given for cellulitis. She is afebrile, does not have any other symptoms, and has never smoked. Examination reveals tender purple / red nodules on her shins. A chest radiograph shows prominent hilar regions.

*What is the appropriate management?*

- 1- Lung Biopsy
- 2- Arrange CT scan of the lungs
- 3- Arrange bronchoscopy and bronchoalveolar lavage to exclude malignancy
- 4- Start prednisolone
- 5- Arrange outpatients appointment for follow up

## Answer &amp; Comments

Answer: 5- Arrange outpatients appointment for follow up

The combination of bilateral hilar lymphadenopathy and erythema nodosum is diagnostic of sarcoidosis. This is usually self-limiting. She should however be seen in outpatients with full lung function tests including transfer factor and lung volumes. Serum angiotensin-converting enzyme (ACE) level and lung functions can be used to monitor disease. Worsening disease can be treated with prednisolone.



Sarcoidosis



## [ Q: 324 ] MRCPass - Respiratory

A 50 year old patient has become more breathless over several days. He was assessed with a spectrum of tests. The chest X ray was normal. In the interpretation of his arterial blood gases on air the following results were obtained:-

$pO_2$ : 8.0 kPa

$pCO_2$ : 9.2 kPa

pH: 7.40

Base Excess +2

*What disease is likely to have caused this?*

- 1- Community acquired pneumonia
- 2- Bronchiectasis
- 3- Tuberculosis
- 4- Guillain barre syndrome
- 5- Small cell carcinoma

## Answer &amp; Comments

Answer: 4- Guillain barre syndrome

The raised  $CO_2$  and hypoxia demonstrate type II respiratory failure. The causes of this could be obstructive lung disease, neurogenic, or musculoskeletal (kyphoscoliosis).



## [ Q: 325 ] MRCPass - Respiratory

A 40 year lady presents with a 6 month history of intermittent haemoptysis.

She describes episodes of cutaneous flushing, which typically affects the head and neck. The episodes are often associated with an unpleasant warm feeling, itching feeling. They last for half an hour.

She is slightly breathless but has had no evidence of leg swelling or chest pain. She smokes 10 cigarettes a day.

She has lost 3 kg of weight in the past two months and has been experiencing night sweats. A Chest x ray shows sail sign in the left lower lobe, but no visible consolidation.

*Which one of the following is the most likely diagnosis?*

- 1- Wegener's granulomatosis
- 2- Goodpasture's syndrome
- 3- Carcinoid tumour
- 4- Sarcoidosis
- 5- Tuberculosis

## Answer &amp; Comments

Answer: 3- Carcinoid tumour

A sail sign on the CXR indicates collapse of the left lower lobe. The likely diagnosis is a carcinoid tumour, which is associated with smoking.

An early and frequent (94%) symptom of carcinoid tumors is cutaneous flushing, which typically affects the head and neck. Episodes are often associated with an unpleasant warm feeling, itching, palpitation, upper-body erythema and edema, salivation, diaphoresis, lacrimation, and diarrhea. Exercise, stress, or certain foods (eg, cheese) may trigger an attack. Initial attacks are short, lasting only a few minutes. With time, the duration increases to hours. Flashes are reported to be longest in association with bronchial carcinoids.

Carcinoid tumours are neuroendocrine tumours arising from Kulchitzky cells. They can be central or peripheral, and are classified

as typical or atypical depending on their histology. They are slow growing tumours of lung with a peak incidence around age 40. Bronchial obstruction is common. Diagnosis is by bronchoscopy and biopsy.

Treatment is usually with lobectomy.



Sail sign (straight line around the heart border)



[ Q: 326 ] MRCPass - Respiratory

A 68 year old man with emphysema is referred to a chest clinic for consideration of oxygen therapy. Despite maximal treatment with bronchodilators, his exercise tolerance is reduced to about 25 yards.

Physical examination and pulmonary function test was consistent with emphysema. There was no evidence of heart failure. ECG was normal. CXR showed hyperinflated lung fields.

Oxygen saturation was 90%. ABG showed pH of 7.36,  $p\text{CO}_2$  of 3.7kPa,  $p\text{O}_2$  of 7.6 kPa.

*What should be recommended?*

- 1- Overnight  $\text{SaO}_2$  monitoring
- 2- Course of steroids
- 3- Walking test with a trial of oxygen
- 4- Repeated ABG in 6 weeks time
- 5- Long-term oxygen therapy

Answer & Comments

Answer: 3- Walking test with a trial of oxygen

This patient does not meet the criteria for long term oxygen therapy, which is indicated when the  $\text{paO}_2$  is persistently below 7.3 kPa on air. Clinical stability is defined as the absence of exacerbation of chronic lung disease for the previous 5 weeks.

Patients without chronic hypoxaemia and not on LTOT, should be considered for ambulatory oxygen therapy if they show evidence of exercise oxygen desaturation (a fall of  $\text{SaO}_2$  of at least 4% below 90%), improvement in exercise capacity with ambulatory oxygen therapy and motivation to use the ambulatory oxygen outside the house.

Assessment should be performed on both air and supplemental oxygen with the patient blinded as to the content of the cylinder.



[ Q: 327 ] MRCPass - Respiratory

A 50 year old woman presents with breathlessness that has been getting gradually worse over a few weeks and she has difficulty mobilising. On physical examination she is found to have a large left sided pleural effusion.

The presence of the effusion is confirmed by chest radiography.

*The most appropriate initial investigation would be:*

- 1- Diagnostic aspiration of pleural fluid
- 2- Sputum cytology
- 3- CT chest
- 4- Pleural biopsy
- 5- Mantoux test

Answer & Comments

Answer: 1- Diagnostic aspiration of pleural fluid

The first investigation should be diagnostic aspiration of pleural fluid.

Light's criteria can be used to distinguish transudates from exudates: in exudates at least one of the following three criteria are met:

pleural fluid protein concentration greater than 50% of that in plasma;

pleural fluid LDH greater than 60% of that in plasma;

pleural fluid LDH more than two thirds the upper limit of normal in plasma

In general, if the protein is < 30 g then it is considered to be a transudate, if > 30 g then it is an exudate.



Pneumocystis pneumonia



[ Q: 328 ] MRCPass - Respiratory

A 38 year old man is admitted to the hospital with a one-week history of dyspnoea. He is HIV positive. His chest radiograph shows bilateral alveolar infiltrates. The admitting doctor makes a diagnosis of Pneumocystis carinii pneumonia (PCP).

*What treatment should be started?*

- 1- AZT
- 2- IV metronidazole
- 3- IV co-trimoxazole
- 4- IV fluconazole
- 5- IV amphotericin

Answer & Comments

Answer: 3- IV co-trimoxazole

PCP patients are usually hypoxic and chest radiograph characteristically shows bilateral alveolar infiltrates.

The patient should receive intravenous co-trimoxazole in a dose of 120mg/kg for at least 3 weeks as well as glucocorticoids (IV methylpred for 3 days). This, when used in patients with moderate to severe hypoxia, decreases the risk of respiratory failure and death by over 50%.



[ Q: 329 ] MRCPass - Respiratory

A 40 year old man has a 3 month history of cough, dyspnoea and sputum production. He smokes 20 cigarettes a day and has a history of asthma. There is no history of asbestos exposure.

His WBC count is  $24 \times 10^9/L$  with 70% neutrophils and  $3.0 \times 10^9/L$  (5%) eosinophils. IgE level is elevated. He has decreased breath sounds corresponding to parenchymal infiltrates on the CXR.

*Which is the best test to confirm the diagnosis?*

- 1- HIV test
- 2- Stool for ova, cysts, parasites
- 3- Autoimmune screen
- 4- Aspergillus precipitins
- 5- Sputum for Acid Fast Bacilli

Answer & Comments

Answer: 4- Aspergillus precipitins

The condition described is Allergic Broncho Pulmonary Aspergillosis, commoner among asthmatics and cystic fibrosis patients. Wheeze, shortness of breath and productive cough are symptoms.

Allergic bronchopulmonary aspergillosis results from an allergic reaction to *Aspergillus fumigatus* which actually grows in the walls of the bronchi.

Eosinophilia and high IgE levels are suggestive of the condition. *Aspergillus* precipitins (lab test to detect antibodies) the diagnosis. The chest radiograph often shows evidence of proximal bronchiectasis.



[ Q: 330 ] MRCPass - Respiratory

A 55 year old woman is admitted with a history of syncopal episodes and breathlessness. There is no prior history of recent travel.

On examination she looks distressed. Her pulse rate is 120 beats per minute, blood pressure 85/60, JVP is elevated by 5 cm. Respiratory rate 26 per minute, there is a soft systolic murmur at the left sternal edge. Breath sounds are clear.

Investigations show : HB 12.4 g/dL, Blood gases pH 7.42, PaCO<sub>2</sub> 3.3 kPa, PaO<sub>2</sub> 8.5 kPa.

She was put on high flow oxygen and given low molecular weight heparin.

*The next step in management of this patient should be:*

- 1- High dose aspirin
- 2- Coronary angiography
- 3- Urgent CTPA and consider thrombolysis
- 4- Intravenous unfractionated heparin
- 5- VQ scan

Answer & Comments

Answer: 3- Urgent CTPA and consider thrombolysis

The diagnosis massive central pulmonary embolus as the patient is hypoxic and hypotensive. The best management is to obtain an urgent CTPA and then thromolyse if there are no contraindications (e.g. high risk of bleeding).



[ Q: 331 ] MRCPass - Respiratory

A 50 year old lady has been complaining of worsening difficulty with breathing over the past year. She has previously been diagnosed with a goitre. On examination, she had marked stridor.

*Which of the following is helpful in investigating the extent of airways obstruction?*

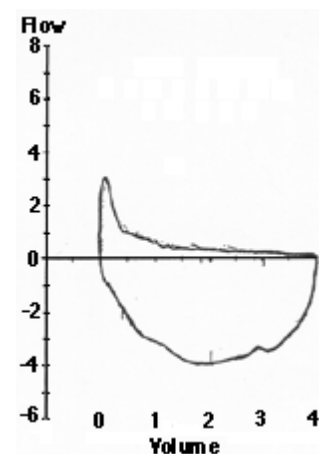
- 1- FEV<sub>1</sub>
- 2- FVC
- 3- Residual volume
- 4- Flow volume loop
- 5- Functional residual capacity

Answer & Comments

Answer: 4- Flow volume loop

The flow volume loop is a graphic recording of airflow during maximal respiration and expiration at different lung volumes, and may be affected in a characteristic way by alterations in the airway resistance. Fixed lesions cause plateaus in both the inspiratory and expiratory limbs of the flow volume loop.

Variable intrathoracic lesions are characterized by expiratory slowing and flattening of the expiratory limb.



Flow Volume Loop showing airways obstruction





## [ Q: 332 ] MRCPass - Respiratory

A 60 year old lady has arthritic changes on her hand joints of ulnar deviation and Butonniere's deformity. She has chronic breathlessness.

*Which of the following is a likely association?*

- 1- Aspergillosis
- 2- Pulmonary fibrosis
- 3- Empyema
- 4- Lung carcinoma
- 5- Pulmonary emboli

## Answer &amp; Comments

Answer: 2- Pulmonary fibrosis

The pulmonary complications of rheumatoid arthritis are :

pulmonary fibrosis (interstitial lung disease)

bronchiolitis obliterans with organizing pneumonia

bronchiectasis

interstitial pneumonitis secondary to drugs



## [ Q: 333 ] MRCPass - Respiratory

A 35 year old man has significant wheezing and breathlessness. Recordings of peak flows shows diurnal variation. He was prescribed with salbutamol but continues to have frequent wheezy episodes.

*What is the next step in management?*

- 1- Phosphodiesterase inhibitors
- 2- Leukotriene antagonists
- 3- Oral antibiotics
- 4- Inhaled corticosteroids
- 5- Oral steroids

## Answer &amp; Comments

Answer: 4- Inhaled corticosteroids

Diurnal PEFR variation points towards a diagnosis of asthma. First line treatment are short acting B agonists such as salbutamol and Patients who do not respond to B agonists should be treated with inhaled corticosteroids (becotide or flixotide) which help to reduce exacerbations in the long term.



## [ Q: 334 ] MRCPass - Respiratory

A 55 year old lady presents with worsening breathlessness. She has a history of Raynaud's phenomenon, heartburn and reflux.

On examination, the skin over her fingers is tight and shiny. She has multiple telangiectasia over her face and nail-fold capillary loops are seen. Her investigations show she has Anticentromere antibodies.

*What respiratory complication may occur?*

- 1- Churg Strauss syndrome
- 2- Metastatic adenocarcinoma
- 3- Pulmonary hypertension
- 4- Allergic bronchopulmonary aspergillosis
- 5- Mesothelioma

## Answer &amp; Comments

Answer: 3- Pulmonary hypertension

The patient has the clinical features of limited cutaneous scleroderma (LcSScformerly CREST syndrome). Anticentromere antibodies occur in 70-80% of these patients. A significant respiratory complication is pulmonary hypertension. Treatment is with prostaglandin analogues e.g. iloprost (intravenous infusions) or bosentan (oral).



## [ Q: 335 ] MRCPass - Respiratory

A 16 year old boy was brought to the A&E with wheeze and extensive rash whilst eating at a Chinese takeaway.

On examination, he had extensive wheezes in his chest, stridor, as well as urticaria covering

his upper and lower limbs. His BP is 82/50 mmHg.

*What is the most likely diagnosis?*

- 1- C1 Esterase Deficiency
- 2- Salmonella infection
- 3- Idiopathic urticaria
- 4- Asthma
- 5- Allergy

#### Answer & Comments

Answer: 5- Allergy

The scenario is consistent with a food allergy, e.g. nuts, leading to an anaphylactic reaction. The patient should be treated with hydrocortisone (iv or im) as well as chlorpheniramine.



[ Q: 336 ] MRCPass - Respiratory

A 40 year old man with pneumonia is being examined.

*Which one of the following positive auscultatory signs is diagnostic of bronchial breathing?*

- 1- Rhonchi
- 2- Increased vocal resonance
- 3- Aegophony
- 4- Whispering pectoriloquy
- 5- Fine inspiratory crepitations

#### Answer & Comments

Answer: 4- Whispering pectoriloquy

Whispering pectoriloquy is a diagnostic sign for bronchial breathing.



[ Q: 337 ] MRCPass - Respiratory

A 16 year old boy with previous tuberculosis had a 7-day history of progressive cough, wheeze and tachypnoea, despite 4

days of intravenous flucloxacillin and cefotaxime therapy.

Total serum IgE titre was 1600 IU (normal range, 0-180 IU) and the skin prick test was positive for *Aspergillus fumigatus*.

*What should he be treated with?*

- 1- Praziquantel
- 2- Aciclovir
- 3- Itraconazole
- 4- Rifampicin
- 5- HAART

#### Answer & Comments

Answer: 3- Itraconazole

Allergic bronchopulmonary aspergillosis (ABPA) is a diagnosis which can be confirmed by significantly elevated serum IgE titre, positive skinprick tests for aspergillus, positive IgG aspergillus precipitins.

Treatment is with antifungals. Steroids may be required in patients with respiratory distress.



[ Q: 338 ] MRCPass - Respiratory

A 35 year old man whose condition has suddenly deteriorated is brought to A&E. He had arrived 30 minutes earlier with a 2-hour history of central pleuritic chest pain and breathlessness. He collapsed while awaiting CXR.

He is cyanosed and has a pulse 130/min and BP of 85/45 mmHg. Oxygen saturation is reading 81%, despite high flow oxygen via a re-breathe mask.

Respiratory examination reveals reduced breath sounds in the right lung field with deviation of the trachea towards the left.

*What immediate course of action should be taken?*

- 1- Pleurodesis

- 2- Insert large bore needle into right hemithorax
- 3- Arrange for urgent portable chest XR
- 4- Check arterial blood gases and commence BIPAP
- 5- Contact ITU to arrange for the patient to be ventilated

#### Answer & Comments

**Answer:** 2- Insert large bore needle into right hemithorax

The diagnosis is a right sided spontaneous pneumothorax, which has now developed into a tension pneumothorax.

As the patient is unstable, there is no time to arrange for portable chest XR, insertion of a large bore needle would reduce the pressure in the right hemithorax.



Large right sided pneumothorax



#### [ Q: 339 ] MRCPass - Respiratory

A 45 year old man develops breathlessness and a non productive cough. He has mild fevers and has lost half a stone in weight over the past six months. He has had previously treated tuberculosis. He works as a taxi driver.

Over the past ten years he and his partner went fossil hunting in old quarries. Sputum samples are AFB negative.

His chest X-ray shows nodular shadowing in the upper zone.

*What is the likely diagnosis?*

- 1- Silicosis
- 2- Reactivation of TB
- 3- Cadmium lung
- 4- Histiocytosis X
- 5- Asbestosis

#### Answer & Comments

**Answer:** 1- Silicosis

Previous TB predisposes to silicosis, which can present as fever, breathlessness and weight loss. Coal miners, quarry workers and people whose hobbies predispose to exposure to silica are at risk.



Silicosis



#### [ Q: 340 ] MRCPass - Respiratory

A 70 year retired sandblaster has worsening symptoms of cough, wheeze and breathlessness. He has been keeping parrots for 15 years as a hobby.

Serum precipitins for M faeni are negative.

Chest X ray shows hyperinflated lungs.

His lung function tests show :

FEV<sub>1</sub> 1.8L (predicted 2.6)

FVC 3.0L (predicted 3.2)

FEV<sub>1</sub>/FVC 60%

*Which of the following is the likely diagnosis?*

- 1- Silicosis
- 2- Chronic obstructive airways disease
- 3- Farmer's lung
- 4- Allergic bronchopulmonary aspergillosis
- 5- Pigeon fancier's lung

#### Answer & Comments

**Answer:** 2- Chronic obstructive airways disease

The lung function tests show an obstructive picture (reduced FEV<sub>1</sub>/FVC ratio). Interstitial lung diseases are more likely to cause a restrictive picture on the lung function test.



#### [ Q: 341 ] MRCPass - Respiratory

A 60 year old asthmatic lady is admitted with sudden onset left sided pleuritic chest pain accompanied by shortness of breath.

Arterial blood gases are as follows: pH of 7.30, pO<sub>2</sub> of 7.5 kPa, and pCO<sub>2</sub> of 3.8 kPa.

Chest XR is normal. She is commenced on oxygen.

*What is the most appropriate immediate action?*

- 1- Request a chest XR in expiration
- 2- Request D-dimer
- 3- Start low molecular weight heparin and request CT pulmonary angiography
- 4- Start low molecular weight heparin and request a V/Q scan
- 5- Broad spectrum antibiotics

#### Answer & Comments

**Answer:** 3- Start low molecular weight heparin and request CT pulmonary angiography

The symptoms and findings clearly point out towards pulmonary embolism (PE). As the clinical probability of PE is high, measurement of D-dimer should not be performed, since the result would not alter the need for definitive investigation. Measurement of D-dimer should only be performed when the probability of PE is low, when a normal value would be taken as reassuring and further investigation would not be pursued.

V/Q scan less likely to be unhelpful in view of her asthma; hence a CT pulmonary angiogram would be the imaging procedure of choice.



#### [ Q: 342 ] MRCPass - Respiratory

A 65 year old man has had 5 kg weight loss over 6 months. He is an ex smoker of 25 cigarettes a day for 40 years and used to work in a coal mine.

A Chest X ray shows a large right sided pleural effusion and several pleural plaques in both lung peripheries.

Pleural aspiration reveals an exudate with 42 g of protein.

*What investigation should be recommended?*

- 1- Bronchoscopy
- 2- Lung function tests
- 3- Spiral CT of the chest
- 4- Thoracoscopy and biopsy
- 5- Sputum for AFB

#### Answer & Comments

**Answer:** 4- Thoracoscopy and biopsy

This patient probably has a malignant effusion as demonstrated by the exudate from the pleural effusion. As he is symptomatic, the best option would be to drain the fluid as well as confirm a diagnosis simultaneously.

A video assisted thoracoscopy would help to do this. In this procedure, an illuminated tube is inserted through a small incision made betw

een the ribs. It allows the operator to visualize structures inside the chest and to perform simple procedures such as biopsy and nodule excision.



[ Q: 343 ] MRCPass - Respiratory

A 65 year old man with a smoking history of 50 a day for many years has been a chest radiograph showing a lung mass. He is presently waiting a bronchoscopy.

*Which one of the following supports a diagnosis of small cell lung cancer?*

- 1- Disseminated intravascular coagulation
- 2- Hypertrophic pulmonary osteoarthropathy (HPOA)
- 3- Syndrome of inappropriate antidiuretic hormone secretion (SIADH)
- 4- Thrombocytosis
- 5- Hypercalcaemia

Answer & Comments

Answer: 3- Syndrome of inappropriate antidiuretic hormone secretion (SIADH)

SIADH is most commonly seen with small cell carcinoma rather than non-small cell carcinoma. HPOA, hypercalcaemia without bone metastasis is more common in squamous cell carcinoma. DIC and thrombocytosis are more common with adenocarcinoma.



[ Q: 344 ] MRCPass - Respiratory

A 60 year old woman presents with a 6-month history of progressive shortness of breath. Her past medical history is unremarkable apart from Raynaud's syndrome for which she takes a calcium channel blocker.

On examination she has telangiectasia.

Her chest radiograph shows clear lung fields, prominent pulmonary arteries and mildly enlarged heart. Spirometry is normal, but gas transfer is reduced by 40% of predicted.

*What is the most likely diagnosis?*

- 1- Cor pulmonale
- 2- Pulmonary arterial hypertension
- 3- Sarcoidosis
- 4- Pulmonary emboli
- 5- Pulmonary oedema

Answer & Comments

Answer: 2- Pulmonary arterial hypertension

The patient is likely to have scleroderma from the clinical history.

There is also associated pulmonary hypertension which such patients are at risk of.



[ Q: 345 ] MRCPass - Respiratory

A 75 year old lady is admitted with an acute exacerbation of chronic obstructive pulmonary disease (COPD). One hour after admission she remains distressed with a respiratory rate of 35 per minute and is peripherally cyanosed. Repeated arterial blood gases show a severe respiratory acidosis with a pH of <7.2.

*Which of the following treatments is recommended?*

- 1- Give intravenous infusion of aminophylline
- 2- Give intravenous hydrocortisone
- 3- Repeat bronchodilator therapy and arrange repeat arterial gases
- 4- Arrange for noninvasive positive pressure ventilation
- 5- High flow oxygen

Answer & Comments

Answer: 4- Arrange for noninvasive positive pressure ventilation

Non invasive positive pressure ventilation should be considered, especially in COPD patients when there is a need for ventilatory

assistance as indicated by worsening dyspnoea, acute respiratory acidosis and worsening oxygenation. If this does not work then intubation and ventilation may be necessary.



[ Q: 346 ] MRCPass - Respiratory

A 65 year old man presents with inspiratory stridor. A chest X-ray showed compression of the trachea by a retrosternal goitre.

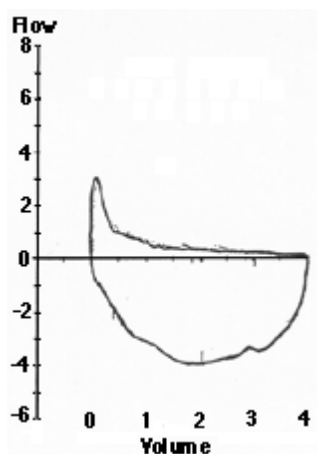
*Which of the following investigations is the most useful to assess the severity of his airways obstruction?*

- 1- Flow volume loop
- 2- Forced expiratory volume
- 3- Forced vital capacity
- 4- Peak expiratory flow rate
- 5- Residual volume

Answer & Comments

Answer: 1- Flow volume loop

The flow volume loop is the best method of assessing extent of obstruction associated with a retrosternal mass.



Flow volume loop showing airways obstruction



[ Q: 347 ] MRCPass - Respiratory

A 25 year old man who smokes, has progressive breathlessness. He has had a long history of recurrent chest infections. His lung function tests show a FEV<sub>1</sub>/FVC ratio of 65%, reduced FEV<sub>1</sub>, FVC and KCO of 45% predicted. He also has an uncle who had a similar presentation.

*Which is the likely diagnosis?*

- 1- Eosinophilic granuloma
- 2- Asthma
- 3-  $\alpha$  1 antitrypsin deficiency
- 4- Fibrosing alveolitis
- 5- Rheumatoid lung

Answer & Comments

Answer: 3-  $\alpha$  1 antitrypsin deficiency

$\alpha$  1 antitrypsin deficiency is autosomal recessive and causes an emphysematous (obstructive picture) on the lung function tests, with reduced transfer factor. The phenotypes are M S or Z. ZZ has the worse outcome.

Smoking cessation is essential.

Genotype	Prevalence %	Reduction AAT level (%)
MM	88	0
MS	7	20
MZ	4	40
SS	1	40
SZ	0.1	70
ZZ	0.03	90



[ Q: 348 ] MRCPass - Respiratory

A 55 year old woman with rheumatoid arthritis is referred with a history of recurrent chest infections, intermittent wheeze and production of half a teacupful of sputum daily, on occasions with blood stained.

*What is the most likely diagnosis?*

- 1- Pulmonary fibrosis



- 2- Bronchiectasis
- 3- Emphysema
- 4- Tuberculosis
- 5- Squamous lung carcinoma

#### Answer & Comments

**Answer:** 2- Bronchiectasis

Bronchiectasis is associated with rheumatoid arthritis, occurring in 3-4% of patients with this condition. As with all other causes of bronchiectasis, it presents with recurrent chest infections and excessive sputum. Recurrent haemoptysis is a common feature.



#### [ Q: 349 ] MRCPass - Respiratory

A 38 year old man with a history of depression is brought to the accident and emergency department after being found unconscious in a garage. A friend said that he complained of a headache, then had nausea and vomiting.

He then became unrousable.

Oxygen saturations are 95% on air and breath sounds are clear on auscultation.

*What is the likely diagnosis?*

- 1- Pulmonary eosinophilia
- 2- Pulmonary embolus
- 3- Adult respiratory distress syndrome
- 4- Pneumocystis pneumonia
- 5- Carbon monoxide poisoning

#### Answer & Comments

**Answer:** 5- Carbon monoxide poisoning

Carbon monoxide poisoning is produced by the incomplete combustion of carbon containing fuels such as gas, coal, oil, wood and coke.

Headache is the most common symptom (90%) followed by nausea & vomiting, vertigo, alteration in consciousness and weakness.

The cherry red skin colour occurs when COHb concentration exceeds 20% but it is rarely seen in life. Pulse oximetry gives falsely high oxygen saturation and it is not recommended.



#### [ Q: 350 ] MRCPass - Respiratory

A 45 year man has breathlessness and a dry cough. On examination, there are bilateral basal crepitations in his lungs. Oxygen saturations are 95% on air. Circulating precipitins towards *Micropolyspora faeni* are positive.

*What is the likely diagnosis?*

- 1- ABPA
- 2- Bagassosis
- 3- Farmer's lung
- 4- Bird fancier's lung
- 5- Cheese worker's lung

#### Answer & Comments

**Answer:** 3- Farmer's lung

This is a form of hypersensitivity pneumonitis. Farmer's lung is caused by the actinomycetes *Micropolyspora faeni*, and bagassosis is caused by *Thermoactinomyces sacchari*.



#### [ Q: 351 ] MRCPass - Respiratory

A 45 year old man develops breathlessness and a non productive cough. He has mild fevers and has lost half a stone in weight over the past six months. He has had previously treated tuberculosis. He works as a taxi driver.

Over the past ten years he and his partner went fossil hunting in old quarries. Sputum samples are AFB negative.

His chest X-ray shows nodular shadowing in the upper zone.

*What is the likely diagnosis?*

- 1- Silicosis

- 2- Cadmium lung
- 3- Histiocytosis X
- 4- Reactivation of TB
- 5- Asbestosis

#### Answer & Comments

**Answer:** 1- Silicosis

Previous TB predisposes to silicosis, which can present as fever, breathlessness and weight loss. Coal miners, quarry workers and people whose hobbies predispose to exposure to silica are at risk.



Silicosis - Mid and Upper Zone linear and reticulonodular shadowing,



#### [ Q: 352 ] MRCPass - Respiratory

A 70 year old man who has previously worked in the building trade presents with a history of chest pain and dyspnoea. On examination he has evidence of a right-sided pleural effusion. Pleural aspiration is performed and a pleural biopsy taken. Histology from the biopsy shows mesothelioma.

**What should be done?**

- 1- The diagnosis should be queried
- 2- Radiotherapy should be given to prevent seeding of tumour cells
- 3- Surgery
- 4- Chemotherapy should be given to prevent seeding of tumour
- 5- Curative radiotherapy should be given

#### Answer & Comments

**Answer:** 2- Radiotherapy should be given to prevent seeding of tumour cells

In mesothelioma no treatment has been shown to influence the universally fatal outcome. After obtaining a positive biopsy, radiotherapy should be given in an attempt to prevent seeding of tumour cells, around the area of the biopsy.



#### [ Q: 353 ] MRCPass - Respiratory

A 50 year old iv drug user has been referred to the medical ward after being brought in to casualty. He has a chronic cough productive of sputum, loss of weight, and night sweats. On examination he is unkempt and emaciated. His trachea is deviated to the left and there are crepitations over the apex of the left lung.

CXR shows fibrosis and cavitation in the left apex.

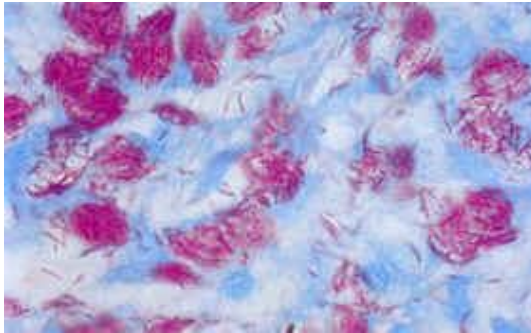
**The investigation most likely to confirm the diagnosis would be:**

- 1- CT chest
- 2- Gastric lavage
- 3- Sputum for acid and alcohol fast bacilli
- 4- Mantoux test
- 5- Fibreoptic bronchoscopy

#### Answer & Comments

**Answer:** 3- Sputum for acid and alcohol fast bacilli

TB is likely. In a patient with a productive cough, AFBs should be positive in the sputum.



Red coloured AFB



## [ Q: 354 ] MRCPass - Respiratory

A 55 year old smoker has a history of breathlessness and a dry cough. He has several nodules present in the perihilar region. His serum calcium is normal. A bronchoscopy and transbronchial biopsy is done. This shows non necrotic granulomas and multinucleated giant cells.

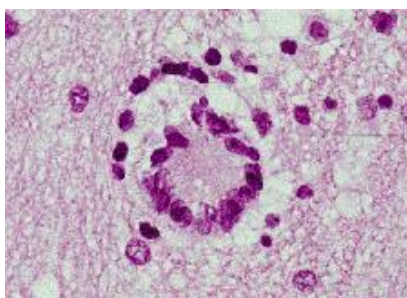
*Which of the following is likely?*

- 1- Histoplasmosis
- 2- Aspergillosis
- 3- Tuberculosis
- 4- Small cell carcinoma
- 5- Silicosis

## Answer &amp; Comments

Answer: 3- Tuberculosis

Multinucleated giant cells are very large epidermis cells that have multiple nuclei. They can be present in viral infections (e.g. herpes), TB or lymphoma. Granulomatous disease suggests either sarcoid, TB or Wegener's granulomatosis.



A multinucleated giant cell



## [ Q: 355 ] MRCPass - Respiratory

A 30 year old woman with epilepsy has been diagnosed with pulmonary tuberculosis and is about to be started on quadruple therapy.

*Which drug may cause urine discolouration?*

- 1- Pyrazinamide
- 2- Erythromycin
- 3- Rifampicin
- 4- Isoniazid
- 5- Ethambutol

## Answer &amp; Comments

Answer: 3- Rifampicin

Discoloration of urine is due to rifampicin. Rifampicin is a liver enzyme inducer but isoniazid is an enzyme inhibitor.



Urine discolouration in a patient taking Rifampicin



## [ Q: 356 ] MRCPass - Respiratory

A 30 year old male patient presents with worsening rhinitis, cough and wheezing, which has occurred for the past 2 years. On admission, his lung function tests show FEV<sub>1</sub> of 55% predicted and FVC of 65% predicted and a chest X ray showed bilateral infiltrates.

He had an eosinophil count of  $5 \times 10^9/L$  (0.04-0.4) and sputum eosinophilia of 80% was also found. There was also elevated IGE levels of >1000 kU/L. Serum ANCA was positive at a dilution of 1:1024.

A nasal biopsy showed chronic inflammation, with some areas suggestive of vasculitis, and eosinophilic infiltration.

*Which diagnosis is most likely?*

- 1- COPD
- 2- Mesothelioma
- 3- Churg Strauss syndrome
- 4- Tuberculosis
- 5- Extrinsic allergic alveolitis

#### Answer & Comments

Answer: 3- Churg Strauss syndrome

There are many causes of pulmonary symptoms with eosinophilia including Loeffler's syndrome, Churg Strauss syndrome, pulmonary eosinophilic syndrome and ABPA. Extrinsic allergic alveolitis does not cause a wheeze and also does not cause eosinophilia.

Churg-Strauss syndrome is an uncommon condition characterised by asthma and blood eosinophilia together with an eosinophilic vasculitis. The initial phase of the disorder is one of asthma and allergic rhinitis, often followed by peripheral blood eosinophilia with eosinophilic tissue disease. The vasculitic phase that follows is life-threatening; however, it can often be treated effectively with immunosuppression. It is associated with granuloma formation and vasculitis affecting several organs e.g. skin, pericardium, kidney and lung.

Serum eosinophilia and elevated IgE levels are typical. Laboratory diagnosis is based on tissue biopsy and the antineutrophil cytoplasmic antibody (ANCA) test. About 25% of patients have cANCA and about 50% have pANCA.



[ Q: 357 ] MRCPass - Respiratory

A 44 year old man has presented with haemoptysis. He had a chest X ray which shows masses with air halo around them in the upper zones. He has positive serum precipitins.

*What is the likely diagnosis?*

- 1- tuberculosis
- 2- Aspergillosis
- 3- Actinomycosis
- 4- Extrinsic allergic alveolitis
- 5- Coal worker's lung

#### Answer & Comments

Answer: 2- Aspergillosis

The air halo sign is particularly associated with the fungal infection aspergillosis. This may be predisposed to by previous TB infection leading to cavitation. The positive serum precipitins are towards aspergillus.



Aspergilloma



## [ Q: 358 ] MRCPass - Respiratory

A 55 year lady has had a long history of productive cough and shortness of breath. She often coughs up whitish sputum and is prone to chest infections. On examination her temperature is 36° C, chest expansion is reduced and there are bilateral wet inspiratory crackles.

*Which one of the following treatments is most helpful?*

- 1- Intravenous antibiotics
- 2- B agonist inhalers
- 3- Postural drainage
- 4- Morphine
- 5- Prednisolone

## Answer &amp; Comments

Answer: 3- Postural drainage

This lady has bronchiectasis. There is no suggestion of a chest infection during this episode of admission, hence postural drainage is the best treatment option.



## [ Q: 359 ] MRCPass - Respiratory

A 55 year old farmer has had progressive breathlessness over the past 2 years. He presents with a severe episode of dyspnea and productive cough which occurred 6 hours after he started working. He mentions that these episodes are typical but today is more severe. On admission, his O<sub>2</sub> saturations are 94% on air.

CXR shows bilateral interstitial shadowing in upper zones.

*Which of the following is the most useful test?*

- 1- Precipitins to aspergillus
- 2- Sputum for AFB
- 3- Kveim test
- 4- Precipitins to Micropolyspora faeni
- 5- Bronchoscopy

## Answer &amp; Comments

Answer: 4- Precipitins to Micropolyspora faeni

This patient is likely to have extrinsic allergic alveolitis. The classic presentation of farmer's lung results from inhalational exposure to thermophilic Actinomyces species.

Patients with extrinsic allergic alveolitis may present acutely with a flulike illness with cough. They can also present subacutely with recurrent pneumonia or chronically with exertional dyspnea, productive cough, and weight loss.

The onset of symptoms after acute exposure is usually between 4 and 12 hours. Some antigens provoke symptoms after repeated exposure; these include bioaerosols of microbial or animal antigens and a few reactive chemicals.

Thermophilic actinomycetes species which can cause EAA include Saccharopolyspora rectivirgula (formerly Micropolyspora faeni), Thermoactinomyces vulgaris,



Thermoactinomyces viridis, and Thermoactinomyces sacchari.



[ Q: 360 ] MRCPass - Respiratory

A 60 year old woman had a CXR showing pulmonary fibrosis. Upon review , of her drug history, *which of the following drugs might she have been on in the past?*

- 1- Clarithromycin
- 2- Amoxicillin
- 3- Busulphan
- 4- Omeprazole
- 5- Ciprofloxacin

Answer & Comments

Answer: 3- Busulphan

Busulphan, bleomycin, amiodarone and nitrofurantoin are drugs which commonly cause pulmonary fibrosis.



[ Q: 361 ] MRCPass - Respiratory

A 65 year old farmer has been getting worsening breathlessness for the past 4 years. These symptoms occur during work and are often worse for approximately 10 hours after. He is a non smoker.

An X-ray of the chest revealed intensified interstitial lung markings and reticular changes in the lower parts of the lung. He also had raised serum precipitins to micropolyspora faeni.

*What is the diagnosis?*

- 1- Tuberculosis
- 2- Wegener's granulomatosis
- 3- Churg Strauss syndrome
- 4- Extrinsic allergic alveolitis
- 5- Pulmonary eosinophilia

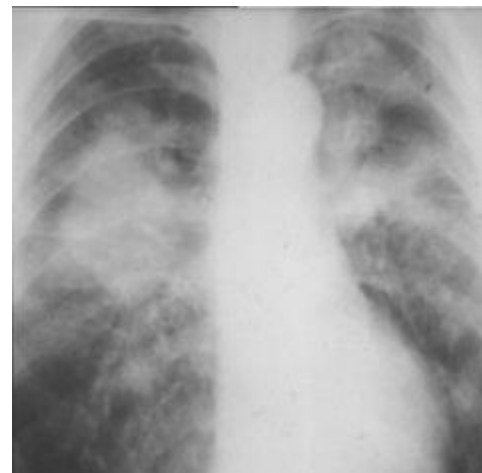
Answer & Comments

Answer: 4- Extrinsic allergic alveolitis

Extrinsic allergic alveolitis causes a neutrophilia due to cell mediated but eosinophil count is normal. Bronchoalveolar lavage shows lymphocytes and mast cells.

EAA is a delayed hypersensitivity reaction which may be immune complex (III) mediated or cell mediated (type IV) in chronic disease.

In Extrinsic Allergic Alveolitis, the most common antigens are thermophilic actinomycetes and avian proteins, and the most common diseases are farmer's lung and bird fancier's lung. Precipitins to micropolyspora faeni are seen in farmer's lung. Upper zone fibrosis causes audible crackles. Symptoms are typically of breathlessness but not wheeze.



EAA causing upper zone fibrosis



[ Q: 362 ] MRCPass - Respiratory

A 22 year old woman has asthma for which she is using her salbutamol inhaler two or three times a day.

*What should be the next step in her management if she worsens?*

- 1- Advise her to use the salbutamol inhaler regularly three times a day
- 2- Add regular inhaled steroid, e.g. beclometasone 100 microg twice daily
- 3- Add regular salmeterol twice daily



- 4- Add regular inhaled steroid, e.g. beclometasone 1000 microg twice daily
- 5- Add regular inhaled steroid, e.g. beclometasone 1000 microg twice daily, plus regular long-acting inhaled beta agonist

#### Answer & Comments

**Answer:** 2- Add regular inhaled steroid, e.g. beclometasone 100 microg twice daily

The British Thoracic Society Asthma guidelines are as follows:

Step 1: PRN use of inhaled short-acting beta agonists

Step 2: regular inhaled steroids

Step 3: high-dose inhaled steroids, or low - dose inhaled steroids plus long-acting beta agonist

Step 4: high-dose inhaled steroid and regular bronchodilators (sustained release theophylline, inhaled ipatropium, oral long-acting beta agonist, high-dose inhaled bronchodilators, cromoglycate / nedocromil)

Step 5: addition of regular steroid tablets



#### [ Q: 363 ] MRCPass - Respiratory

A 60 year old woman with known COPD is referred with a 4-month history of morning headaches. She describes a dull headache which is generalised, worst upon waking up. She has home nebuliser (salbutamol and atrovent) but is not on home oxygen.

A routine arterial blood gas on admission showed a pH of 7.34 pCO<sub>2</sub> of 6.2 kPa, pO<sub>2</sub> of 8.8 kPa and HCO<sub>3</sub> 30 mmHg.

**What should be done?**

- 1- Long-term oxygen therapy
- 2- Ambulatory oxygen therapy
- 3- CT chest
- 4- Overnight SaO<sub>2</sub> and CO<sub>2</sub> monitoring

- 5- Repeat ABG

#### Answer & Comments

**Answer:** 4- Overnight SaO<sub>2</sub> and CO<sub>2</sub> monitoring

Morning headaches are often ascribed to patients with nocturnal hypoxia or early morning hypercapnia. They are often associated with sleep apnea or a chronic respiratory disease such as COPD.

The admission blood gases show mild hypoxia, and hypercapnia. There is respiratory acidosis with metabolic compensation. It suggests that there is a high likelihood of chronic hypoxia.

If oxygen monitoring confirmed nocturnal hypoxia (defined as O<sub>2</sub> sats of < 90% for more than 30% of sleep time), she may require nocturnal oxygen supplementation.



#### [ Q: 364 ] MRCPass - Respiratory

A couple attend the GP surgery with their 2 year old daughter. She has a history of repeated chest infections, failure to thrive, and steatorrhea (fatty stools). They also have an 8 year old child who is fit and well.

**What is the likely diagnosis?**

- 1- Pulmonary Eosinophilia
- 2- Asthma
- 3- Cystic fibrosis
- 4- Congenital Tuberculosis
- 5- Bochdalek Hernia

#### Answer & Comments

**Answer:** 3- Cystic fibrosis

The gene defect in cystic fibrosis is in a mutation on chromosome 7. The inheritance is autosomal recessive so the other child without symptoms has not inherited two CF genes. Pulmonary disease develops over a few months after birth. Common infective

organisms are pneumococcus, Haemophilus influenzae and Pseudomonas aeruginosa.



[ Q: 365 ] MRCPass - Respiratory

A 45 year old man complains of wheeziness which is worse. He has a history of asthma. His current medication consists of a low dose of inhaled corticosteroids and inhaled short-acting beta 2 agonist taken three to four times a day.

*What should be done next?*

- 1- Add oral steroids
- 2- Add an inhaled long-acting beta 2 agonist
- 3- Add a long-acting anticholinergic
- 4- Add a short acting anticholinergic
- 5- Add a leucotriene receptor antagonist

Answer & Comments

Answer: 2- Add an inhaled long-acting beta 2 agonist

According to the British Thoracic Society guidelines the next step would be to add an inhaled long-acting beta 2 agonist (LABA) and then assess the situation. If there is a good response to LABA, this medication should be continued. If there is benefit from LABA but control is still inadequate, LABA should be continued, and the inhaled corticosteroids should be increased to a high dose.



[ Q: 366 ] MRCPass - Respiratory

A 65 year old heavy smoker is admitted with a history of increasing breathlessness. This has been precipitated by the development of a cough with yellow purulent sputum.

*The organisms that are likely to cause infective exacerbations of COPD are:*

- 1- Streptococcus pneumoniae, Legionella pneumophila, Mycoplasma pneumoniae

- 2- Streptococcus pneumoniae, Klebsiella pneumoniae, E coli
- 3- Streptococcus pneumoniae, Haemophilus influenzae, Moraxella catarrhalis
- 4- Streptococcus pneumoniae, Pseudomonas aeruginosa, Staphylococcus aureus
- 5- Streptococcus pneumoniae, Haemophilus influenzae, Legionella pneumophila

Answer & Comments

Answer: 3- Streptococcus pneumoniae, Haemophilus influenzae, Moraxella catarrhalis

In infective exacerbations of COPD, Streptococcus pneumoniae and Haemophilus influenzae, as well as Moraxella are the commonest organisms.



[ Q: 367 ] MRCPass - Respiratory

A 65 year old man has longstanding breathlessness on exertion. He has been smoking 20 cigarettes a day over a period of 30 years.

On examination, the patient is breathless with use of accessory muscles and resting activation of the abdominal muscles. The chest is barrel shaped.

*With regards to this case, which one of the following is known to be a predictor of mortality?*

- 1- Spirometry
- 2- Fibrotic changes
- 3- Body Mass Index
- 4- Arterial blood gases
- 5- How many cigarettes were smoked

Answer & Comments

Answer: 3- Body Mass Index

A low body mass index is a known predictor of mortality in patients with chronic obstructive pulmonary disease.



## [ Q: 368 ] MRCPass - Respiratory

A 40 year man presents with shortness of breath. On admission he is unwell and has a respiratory rate of 32 breaths per minute. His chest is wheezy on auscultation.

Arterial blood gases show :

pO<sub>2</sub> 9.5 kPa, pCO<sub>2</sub> 3.5 kPa, pH 7.48, HCO<sub>3</sub> 25, BE +2.

*What is the likely clinical scenario?*

- 1- Lactic acidosis secondary to metformin
- 2- Anxiety disorder
- 3- Asthma attack
- 4- Chronic bronchitis
- 5- Pneumothorax

## Answer &amp; Comments

Answer: 3- Asthma attack

The patient has a respiratory alkalosis (pH > 7.45) which is acute since the bicarbonate levels are normal (22-28). There is hypoxia and the patient is hyperventilating in response and blowing off CO<sub>2</sub>.

This would be consistent with an asthma attack.

In an anxiety attack, hypoxia would not be present.



## [ Q: 369 ] MRCPass - Respiratory

A 30 year old man is admitted with a history of haemoptysis, cough and dyspnoea. He has been previously fit and has smoked 25 cigarettes a day for the last 10 years. A chest XR shows diffuse alveolar infiltrates. He has a microcytic, hypochromic anaemia, urine dipstick confirms haematuria and proteinuria. His lung function tests shows a normal spirometry and a TLCO of 125% predicted.

*What is the most likely diagnosis?*

- 1- Pulmonary emboli
- 2- Chest trauma

- 3- Goodpasture's syndrome
- 4- Pulmonary tuberculosis
- 5- Pneumonia

## Answer &amp; Comments

Answer: 3- Goodpasture's syndrome

Goodpasture's syndrome is characterised by diffuse alveolar haemorrhage and glomerulitis. Men are commonly affected with most cases occurring between the ages of 20-30 years. It is more likely to occur in smokers. The anti glomerular basement antibody (Anti-GBM) is present in up to 90% of the patients. Renal histology usually shows a focal segmental necrotizing glomerulitis with crescent formation. The TLCO is increased during active bleeding and can be used to monitor disease activity. An increase above 30% of baseline is suggestive of an intra-alveolar bleed.



## [ Q: 370 ] MRCPass - Respiratory

A 60 year old man presents with severe breathlessness following an upper respiratory tract infection.

*Which of the following would support a diagnosis of acute respiratory distress syndrome (ARDS)?*

- 1- High protein content of pulmonary oedema fluid
- 2- Normal chest Xray
- 3- High pulmonary capillary wedge pressure
- 4- Increased lung compliance
- 5- High CO<sub>2</sub> levels

## Answer &amp; Comments

Answer: 1- High protein content of pulmonary oedema fluid

Acute respiratory distress syndrome is characterised by hypoxaemia, reduced lung compliance, pulmonary hypertension and

pulmonary infiltrates on chest X ray. There is damage to the capillary endothelial cell linings resulting in oedema leakage of proteins cells into interstitial alveolar spaces.

A high pulmonary capillary wedge pressure suggests heart failure. High CO<sub>2</sub> reflect type II respiratory failure and are non specific.



[ Q: 371 ] MRCPass - Respiratory

A 60 year old man had a transbronchial biopsy confirming squamous cell carcinoma of the lung.

*Which of the following is a contraindication to ards surgical resection?*

- 1- Hypercalcaemia
- 2- Superior vena caval obstruction
- 3- Previous radiotherapy
- 4- Metastasis to local lymph nodes
- 5- Pleural effusion

Answer & Comments

Answer: 2- Superior vena caval obstruction

Extensive nodal spread, distal metastases, stage IIIB or more, and superior vena caval obstruction are contraindications to ards surgery for lung cancer.



[ Q: 372 ] MRCPass - Respiratory

*In which of the following have randomised controlled trials shown that long-term oxygen therapy (LTOT) reduces mortality?*

- 1- Asthma
- 2- Chronic obstructive lung disease
- 3- Cryptogenic fibrosing alveolitis
- 4- Cystic fibrosis
- 5- Pulmonary sarcoidosis

Answer & Comments

Answer: 2- Chronic obstructive lung disease

There is evidence for a small reduction in mortality in patients with COPD and resting hypoxia. Although indications for LTOT are largely based on mortality data, some studies have also suggested improvements in other outcome measures, including depression, cognitive function, quality of life, exercise capability, and frequency of hospitalisation.



[ Q: 373 ] MRCPass - Respiratory

A 50 year old woman has an incidental finding of raised left hemidiaphragm on the CXR. She has had no history of cardiothoracic surgery or trauma to the chest.

*What is the likely diagnosis?*

- 1- Vagus nerve palsy
- 2- Horner's syndrome
- 3- Hiatus hernia
- 4- Phrenic nerve palsy
- 5- Hepatomegaly

Answer & Comments

Answer: 4- Phrenic nerve palsy

Causes of phrenic nerve palsy are :

- pneumonia
- pleurisy
- aortic aneurysm
- substernal goiter
- neoplasms
- thoracic surgery
- herpes zoster infection
- vasculitis
- diabetes



Raised Left hemidiaphragm



## [ Q: 374 ] MRCPass - Respiratory

A 35 year old man has symptoms of wheezing and has been diagnosed as having late onset asthma. However, his GP measured routine blood tests and found that he had a creatinine of 250  $\mu\text{mol/l}$ .

*What antibody is likely to be helpful in confirming the diagnosis?*

- 1- Antinuclear antibody
- 2- Anti phospholipids antibody
- 3- Anti Ro antibody
- 4- Anti nuclear cytoplasmic antibody
- 5- Anti gliadin antibody

## Answer &amp; Comments

**Answer:** 4- Anti nuclear cytoplasmic antibody

The clinical diagnosis is likely to be an ANCA positive small vessel vasculitis such as polyarteritis nodosa, as there is pulmonary and renal involvement. Churg Strauss syndrome should also be considered (only a small proportion of patients with Churg Strauss have a positive ANCA)



## [ Q: 375 ] MRCPass - Respiratory

A 60 year old man has a long history of smoking and COPD. His resting  $\text{pO}_2$  is 7.2 kPa and he continues to be breathless despite being on home nebulisers. He is assessed for long term oxygen therapy (LTOT).

*When is LTOT indicated?*

- 1-  $\text{pO}_2 < 7.2 \text{ kPa}$
- 2-  $\text{pO}_2 < 7.8 \text{ kPa}$
- 3-  $\text{pO}_2 < 8 \text{ kPa}$
- 4-  $\text{pO}_2 < 8.5 \text{ kPa}$
- 5-  $\text{pO}_2 < 9 \text{ kPa}$

## Answer &amp; Comments

**Answer:** 1-  $\text{PO}_2 < 7.2 \text{ kPa}$

When there is polycythaemia or pulmonary hypertension, Long Term Oxygen Therapy is indicated when  $\text{pO}_2 < 8 \text{ kPa}$ . In uncomplicated COPD, it is indicated when  $\text{pO}_2 < 7.2 \text{ kPa}$



## [ Q: 376 ] MRCPass - Respiratory

A 60 year old woman with asthma presents with a history of acute breathlessness and pleuritic chest pain. Her arterial blood gases show the following readings:

$\text{pH} 7.35$ ,  $\text{pO}_2 6.8 \text{ kPa}$ ,  $\text{pCO}_2 4 \text{ kPa}$ , bicarbonate 25  $\text{mmol/L}$

*Which test is most specific to acute pulmonary embolism?*

- 1- MRI of the chest
- 2- CT pulmonary angiogram
- 3- Chest x-ray
- 4- D-Dimers
- 5- V/Q scan

## Answer &amp; Comments

**Answer:** 2- CT pulmonary angiogram

Most of the tests are helpful but a CT pulmonary angiogram remains the gold standard diagnostic test for pulmonary embolism.



## [ Q: 377 ] MRCPass - Respiratory

A 35 year old man presents with

swelling of his lips and around the throat following consumption of prawns. His

investigations show :

serum IgE 150 kU/L (0-120)

C3 level is 77 mg/dL (65-190)

C4 level is 45 mg/dL (15-50)

*Which of the following diagnosis is likely?*

- 1- C1 esterase inhibitor deficiency
- 2- Allergic reaction
- 3- Systemic mastocytosis
- 4- Moon face
- 5- Cellulitis

#### Answer & Comments

Answer: 2- Allergic reaction

Mildly elevated IgE concentration suggests an allergic reaction to prawns. In angioneurotic oedema due to C1 esterase inhibitor deficiency, a low C4 with normal C3 level is seen (C2 is also low but not commonly measured).



#### [ Q: 378 ] MRCPass - Respiratory

A 40 year old man has with a 2 year history of increasing shortness of breath. This is worse with exertion e.g. climbing the stairs at home and is even slightly so at rest. He is a non-smoker.

On examination, his pulse is 95 beats/min and his blood pressure is 140/95 mmHg. He has finger clubbing and a crackling noise at the end of inspiration over the bases of the lungs. There was no ankle oedema Lung function tests show :

FVC 2.5 l (predicted 3.2 )

FEV<sub>1</sub> 2.1 l (predicted 2.4)

FEV<sub>1</sub> % 76% (predicted 75%)

Diffusing Capacity: Gas Transfer Factor for carbon monoxide: DLCO 17 ml/min/mmHg (predicted) 25

*Which one of the following diagnosis is likely?*

- 1- Aspergilloma
- 2- Guillain-Barre syndrome
- 3- Cryptogenic fibrosing alveolitis
- 4- Asthma
- 5- Congestive cardiac failure

#### Answer & Comments

Answer: 3- Cryptogenic fibrosing alveolitis

A reduced FVC, with normal FEV<sub>1</sub>, FEV<sub>1</sub>% and PEF usually indicates restriction of lung volume . KCO (transfer factor) is also reduced in fibrotic lung disease, as in this case. The additional findings of inspirational crackles and clubbing suggests the diagnosis of cryptogenic fibrosing alveolitis.



#### [ Q: 379 ] MRCPass - Respiratory

A 60 year old man has severe COPD requiring home nebulisers and home oxygen. He is admitted with an infective exacerbation.

*Which of the following results would be expected on the arterial blood gases?*

- 1- PH 7.25 paCO<sub>2</sub> 7 paO<sub>2</sub> 7.5 HCO<sub>3</sub> 30
- 2- PH 7.10 paCO<sub>2</sub> 7 paO<sub>2</sub> 4 HCO<sub>3</sub> 24
- 3- PH 7.30 paCO<sub>2</sub> 4 paO<sub>2</sub> 8.5 HCO<sub>3</sub> 30
- 4- PH 7.40 paCO<sub>2</sub> 4 paO<sub>2</sub> 4 HCO<sub>3</sub> 22
- 5- PH 7.45 paCO<sub>2</sub> 3 paO<sub>2</sub> 12 HCO<sub>3</sub> 24

#### Answer & Comments

Answer: 1- PH 7.25 paCO<sub>2</sub> 7 paO<sub>2</sub> 7.5 HCO<sub>3</sub> 30

A long standing COPD patient would be expected to have a high bicarbonate. However this patient is unwell with type II respiratory failure (high CO<sub>2</sub>) and hence has uncompensated respiratory acidosis.



#### [ Q: 380 ] MRCPass - Respiratory



A 60 year old miner has been in the occupation for 20 years. He presents with a cough and breathlessness.

Chest XR shows diffuse interstitial shadowing. A sputum sample is positive for acid fast bacilli.

*Which of the following dusts is most likely to have predisposed the patient to tuberculosis?*

- 1- Beryllium
- 2- Cadmium
- 3- Coal
- 4- Silica
- 5- House dust

#### Answer & Comments

Answer: 4- Silica

Slate workers, stonemasons and miners are exposed to silica dust. Silicosis impairs macrophage function, and in particular, predisposes to TB infection.



Silicosis



#### [ Q: 381 ] MRCPass - Respiratory

A 34-year-old woman presented with a dry cough, thorax constriction, and generalised weakness. During the preceding 5 months, she had experienced these dry cough episodes twice a week. A lung function test showed a restriction of the vital capacity (71% of the adjusted reference value), and the diffusion capacity was also reduced (66 to 68%).

Bronchoalveolar lavage specimens were obtained, the lymphocytes were increased up to 41% (norm, <10%), and neutrophils were increased up to 6% (norm, <2%) with a normal total cell count.

*What is the likely diagnosis?*

- 1- Asthma
- 2- Pulmonary embolus
- 3- Tuberculosis
- 4- Extrinsic allergic alveolitis
- 5- Alpha 1 antitrypsin deficiency

#### Answer & Comments

Answer: 4- Extrinsic allergic alveolitis

Extrinsic Allergic Alveolitis is a type III or type IV response. There is no eosinophilia. IgG and lymphocytes are involved in immune response. Antigens of micropolyspora faeni and thermoactinomyces are 0.5-5 microns. These antigens which may be detected as serum precipitins.

The acute form takes about 6 hours for sensitisation to the inhaled antigen. The chronic form may take weeks.



#### [ Q: 382 ] MRCPass - Respiratory

A 65 year old patient with COPD is on maximal treatment.

*Which one of the following is likely to prevent further disease progression?*

- 1- Steroids
- 2- Beta agonist inhalers
- 3- Stopping smoking
- 4- Tiotropium
- 5- Home oxygen

#### Answer & Comments

Answer: 3- Stopping smoking

In COPD, discontinuation of smoking is the only features which has been shown to reduce disease progression.



[ Q: 383 ] MRCPass - Respiratory

A 60 year old male smoker has emphysema.

His lung function tests show :

FEV<sub>1</sub> is 0.5 (20% predicted)

FVC is 2.2 (61% predicted)

FEV<sub>1</sub>:FVC ratio of 26%

His arterial blood gases show a pO<sub>2</sub> of 7.5 and 7.2 on two separate occasions. He is mildly breathless at rest, but severely breathless on exertion.

*What is the best measure of his respiratory function?*

- 1- TLCO
- 2- FEV<sub>1</sub>
- 3- FVC
- 4- KCO
- 5- TLC

Answer & Comments

Answer: 2- FEV<sub>1</sub>

The breathlessness worsens considerably without much change in oxygen tension, suggesting that the cause of his dyspnoea is hyperinflation of his chest which worsens on exertion.

Severity of emphysema is defined by the British Thoracic Society (BTS) in relation to FEV<sub>1</sub>, not FEV<sub>1</sub>:FVC ratio. Mild is 60-80% predicted; moderate 40-60% and severe <40%.



[ Q: 384 ] MRCPass - Respiratory

A 40 year old lady was admitted to

hospital with fevers and cough productive of sputum.

Chest X-ray shows diffuse patchy consolidation around the left lung. She has had a flu like illness 4 weeks ago, and has a past medical history of asthma. She also smokes 10 cigarettes a day.

*Which organism is likely to be responsible?*

- 1- Mycoplasma
- 2- Pseudomonas
- 3- Klebsiella
- 4- Staphylococcus
- 5- Tuberculosis

Answer & Comments

Answer: 4- Staphylococcus

Following a viral infection, patients are predisposed to staphylococcal infection. The chest XR changes suggest staphylococcus rather than streptococcus (which would cause lobar consolidation).



[ Q: 385 ] MRCPass - Respiratory

A 50 year old man presents with a 3 month history of cough and breathlessness. He was apyrexial on admission.

His blood shows ESR 60 mm/hr, urea 7 µmol/l, creatinine 100 µmol/l, sodium 137 mmol/l, potassium 4.1 mmol/l, corrected calcium 2.75 (2.2-2.7) mmol/l, phosphate 0.82 (0.8-1.4)mmol/l.

Chest X ray shows bilateral hilar lymphadenopathy and eggshell calcification.

*What is the likely diagnosis?*

- 1- Extrinsic allergic alveolitis
- 2- Tuberculosis
- 3- Sarcoidosis
- 4- Allergic bronchopulmonary aspergillosis
- 5- Leiomyoma

## Answer &amp; Comments

**Answer:** 3- Sarcoidosis

Sarcoidosis can cause many changes on the CXR. Among these are unilateral or bilateral hilar lymphadenopathy, diffuse parenchymal changes, eggshell calcification, pleural effusions and nodules.



Bilateral hilar lymphadenopathy in sarcoidosis



[ Q: 386 ] MRCPass - Respiratory

A 40 year old woman presents with breathlessness, cough and fever. On examination, she has basal crackles in the lung fields. Circulating precipitans to *Micropolyspora faeni* are positive.

*Which of the following is the most likely diagnosis?*

- 1- Pigeon fanciers' lung
- 2- Allergic Bronchopulmonary Aspergillosis
- 3- Farmers' lung
- 4- PCP infection
- 5- Pulmonary fibrosis

## Answer &amp; Comments

**Answer:** 3- Farmers' lung

Farmer's lung is the most common type of hypersensitivity pneumonitis. Hypersensitivity pneumonitis, also known as extrinsic allergic alveolitis, is associated with intense or repeated exposure to inhaled biologic dusts.

The classic presentation of farmer's lung results from inhalational exposure to thermophilic *Actinomyces* species and occasionally from exposure to various *Aspergillus* species.

Acute farmer's lung develops after large exposure to moldy hay or contaminated compost. Symptoms often spontaneously resolve within 12 hours to days if antigen exposure is eliminated or avoided. It manifests as new onset of fever, chills, nonproductive cough, chest tightness, dyspnea, headache, and malaise.



[ Q: 387 ] MRCPass - Respiratory

A 50 year old meat factory worker has been unwell with fever, cough, sweats and lethargy. On examination, he had a purpuric rash and hepatosplenomegaly.

*What is the likely diagnosis?*

- 1- Pulmonary embolism
- 2- Respiratory syncytial viral pneumonia
- 3- Streptococcal pneumonia
- 4- Q fever pneumonia
- 5- Aspergilloma

## Answer &amp; Comments

**Answer:** 4- Q fever pneumonia

Q fever is due to *Coxiella burnetii* and is acquired via animal contact. It can occur in outbreaks in farming communities and in abattoirs. Treatment is with prolonged courses of tetracyclines. Rarely infection can be persistent leading to chronic symptoms including fatigue, malaise and sweats. Hepatitis, hepatosplenomegaly, maculopapular rash and endocarditis are associated.



[ Q: 388 ] MRCPass - Respiratory

A 50 year old woman, is admitted with malaise and fever. Four weeks previously

she had suffered a chest infection for which she was given a course of oral amoxycillin. She felt better initially, but is now getting worse, complaining of intermittent fevers. Her chest radiograph shows a left sided pleural effusion.

An aspirate shows fluid with a protein of 42 g and pH of 7.0.

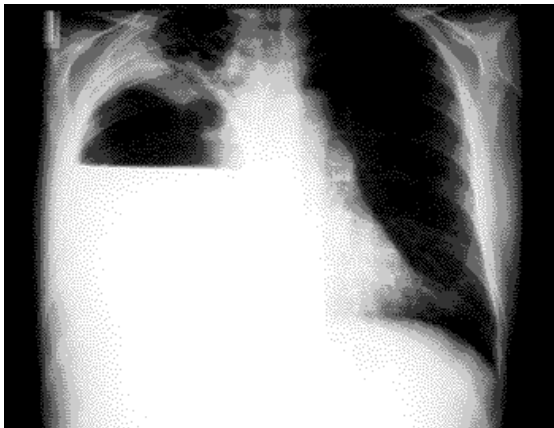
*The most likely diagnosis is:*

- 1- Collapse of the left lung
- 2- Empyema
- 3- Serous pleural effusion
- 4- Fibrotic lung disease
- 5- Tuberculosis

#### Answer & Comments

Answer: 2- Empyema

The likely cause is a pneumonia which has not resolved, leading to empyema. Examination of a pleural aspirate (microscopy for organisms, culture). A protein level >30g would be consistent with an exudate and a pH of < 7.2 is suggestive of infection.



Empyema (air fluid level)





## [ Q: 389 ] MRCPass - Nephrology

A 32 year old diabetic man has chronic renal failure and has on peritoneal dialysis for a few years. He is currently on 1- $\alpha$ -calcidol replacement. His calcium is 3 mmol/l, phosphate 0.6 (0.8-1.4) mmol/l and PTH is 9 (0.8-9.0) pmol/l.

*Which of the following is the diagnosis?*

- 1- Hypercalcaemia secondary to vitamin D replacement
- 2- Primary hyperparathyroidism
- 3- Secondary hyperparathyroidism
- 4- Tertiary hyperparathyroidism
- 5- Normal finding in a dialysis patient

## Answer &amp; Comments

Answer: 4- Tertiary hyperparathyroidism

Secondary hyperparathyroidism occurs in renal failure because of hypocalcaemia due to lack of 1 hydroxylation of 25(OH)Vit D. Tertiary hyperparathyroidism is due to longstanding secondary hyperparathyroidism. Despite Vit D replacement to treat secondary hyperparathyroidism, the parathyroid glands continue to secrete lots of PTH. Treatment should therefore be to remove the parathyroid glands surgically.



## [ Q: 390 ] MRCPass - Nephrology

A 55 year old man with a history of hypertension has renal impairment. His creatinine is 250  $\mu$ mol/l. Urine dipstick shows blood ++ and protein +.

*What is the most useful investigation?*

- 1- Intravenous urogram
- 2- Renal ultrasound
- 3- Renal biopsy
- 4- DTPA scan
- 5- MRI of kidneys

## Answer &amp; Comments

Answer: 3- Renal biopsy

Although there is a possibility of renovascular disease, this patient has urinalysis showing likely glomerulonephritis as a cause of renal impairment, hence renal biopsy is the best investigation.



## [ Q: 391 ] MRCPass - Nephrology

A 55 year old man had a renal transplant 2 years ago. He is on ciclosporin, prednisolone and tacrolimus. He now has several symptoms.

*Which one of the following is a side effect of ciclosporin?*

- 1- Hypokalaemia
- 2- Alopecia
- 3- Gum hypertrophy
- 4- Hemiparesis
- 5- Nephrotic syndrome

## Answer &amp; Comments

Answer: 3- Gum hypertrophy

Hyperkalaemia, hirsutism, tremors, hypertension, nausea and vomiting, headache, gum hypertrophy, paraesthesiae and hypomagnesaemia are side effects of ciclosporin.



## [ Q: 392 ] MRCPass - Nephrology

A 25 year old man has loin pains on the left. His urine dipstick shows blood++ and no protein. MSU culture shows no growth. An abdominal XR shows 2 calculi in the left kidney with a ground glass appearance.

*Which of the following is the management?*

- 1- Treatment is with urine acidification
- 2- D-penicillamine should be commenced
- 3- He should be advised to drink less water



- 4- He should have the calculi removed surgically
- 5- Bendrofluazide should be commenced

#### Answer & Comments

**Answer:** 2- D-penicillamine should be commenced

The ground glass appearance of the stones suggests cystine stones. Cystinuria, an autosomal recessive disease, results from excessive excretion of the four basic amino acids, cystine, ornithine, lysine, and arginine (COLA) into the urine. Cystine is relatively insoluble in acid urine.

Increased fluid intake is recommended to minimise calculi formation. D-penicillamine decreases the urinary excretion of cystine by binding cystine to form the more soluble cystine - S - penicillamine complex that is 50 times more soluble than cystine.



#### [ Q: 393 ] MRCPass - Nephrology

A 65 year old man has a cystoscopy to investigate haematuria. He develops pyrexia a day after the procedure.

*Which one of the following organisms is most likely to be implicated?*

- 1- Proteus
- 2- Enterococcus faecalis
- 3- Pseudomonas
- 4- Staph epidermidis
- 5- Staph aureus

#### Answer & Comments

**Answer:** 4- Staph epidermidis

The commonest organisms infecting causing UTI are E coli, and following that, klebsiella, proteus are next commonest and then enterococci. However, following cystoscopy / instrumentation, staph epidermidis (coagulase negative staph) infection is the commonest.



#### [ Q: 394 ] MRCPass - Nephrology

A 40 year old woman has a history of Raynaud's phenomenon, stiffness in the hands, butterfly rash on her face and arthralgia. She has a blood pressure of 175/90 mmHg. Urine dipstick shows protein ++ and blood +.

Blood tests reveal a creatinine of 145 µmol/l, ESR 60 mm/hour and positive ANA 1/160 titres.

*Which of the following is most likely to be the result of the renal biopsy?*

- 1- Mesangial IgA staining and proliferative glomerulonephritis
- 2- Subendothelial deposits and focal glomerulonephritis
- 3- Deposition of IgA, IgG, IgM and complements with proliferative glomerulonephritis
- 4- Spikes on silver staining with crescentic glomerulonephritis
- 5- Necrotising vasculitis

#### Answer & Comments

**Answer:** 3- Deposition of IgA, IgG, IgM and complements with proliferative glomerulonephritis

There are various forms of lupus nephritis, but the pathognomonic feature is with a full house of immunostaining in the mesangium and capillary loops with all immunoglobulins and complements.

Mesangial IgA staining is seen in IgA nephropathy.

Spikes on silver staining is seen in membranous glomerulonephritis.

Necrotising vasculitic changes are seen in small vessel vasculitis.



## [ Q: 395 ] MRCPass - Nephrology

A diabetic patient is assessed for proteinuria in outpatients.

*Which of the following urine albumin concentrations over 24 hours signify microalbuminuria?*

- 1- 1 mg
- 2- 10 mg
- 3- 100 mg
- 4- 500 mg
- 5- 1 g

## Answer &amp; Comments

Answer: 3- 100 mg

Microalbuminuria defined as a urine albumin excretion between 30-300 mg/day. A concentration above 300 mg/day signifies albuminuria. A concentration above 3g/day signifies overt proteinuria in the nephrotic range.



## [ Q: 396 ] MRCPass - Nephrology

A 15 year old boy is being investigated for growth retardation. He has had no previous medical problems. He mentions that he had symptoms of worsening muscle weakness and fatigue. He also has polyuria.

Investigations revealed:

- urea 8 mmol/l
  - serum creatinine 118  $\mu$ mol/l
  - potassium 2.8 mmol/l
  - sodium 133 mmol/l
  - chloride 79 (95-107) mmol/l
  - calcium 2.3(2.25-2.7) mmol/l
  - phosphate 0.86 (0.8-8) mmol/l
  - magnesium 0.9 (0.67-0.96) mmol/l
- A metabolic alkalosis was present:  
pH 7.58

HCO<sub>3</sub> 40 mmol/l

BE + 18 mmol/l

*What is the likely diagnosis?*

- 1- Bulimia
- 2- Bartter's syndrome
- 3- Diuretic abuse
- 4- Laxative abuse
- 5- Congenital adrenal hyperplasia

## Answer &amp; Comments

Answer: 2- Bartter's syndrome

Bartter's syndrome is hypokalaemic alkalosis due to hyperaldosteronism.

Classical Bartter's syndrome is characterized by early childhood onset and is due to defective chloride transport across the basolateral membrane in the distal nephron as a result of mutations in the chloride channel gene.

Symptoms may include polyuria, polydipsia, vomiting, constipation, salt craving, and a tendency to dehydration.

Hypokalaemia can lead to muscle weakness, spasms, tetany, or palpitations. Urine calcium excretion is high, leading to nephrocalcinosis, while serum magnesium levels are normal.



## [ Q: 397 ] MRCPass - Nephrology

A 50 year old man presents with a 15 year history of lithium carbonate therapy for bipolar affective disorder. He is polyuric and has 3 g/24 hours of proteinuria. Creatinine is 145 micromol/l.

*What is a renal biopsy likely to show ?*

- 1- ANCA positive vasculitis
- 2- Crescentic glomerulonephritis
- 3- Minimal change glomerulonephritis
- 4- Interstitial nephritis
- 5- IgA glomerulonephritis

## Answer &amp; Comments

**Answer:** 4- Interstitial nephritis

With lithium toxicity, chronic interstitial nephritis occurs. A secondary FSGS lesion due to hyperfiltration of remnant nephrons can be seen in 30% of cases.



## [ Q: 398 ] MRCPass - Nephrology

A 75 year old woman was brought to the hospital following a fall. Her neighbour thinks that she was on the floor for about 4 days.

Her blood results show: sodium 132 mmol/l, potassium 6.5 mmol/l, urea 38 µmol/l, creatinine 650 µmol/l, calcium 1.9 (25-2.7) mmol/l, phosphate 2.5 (0.8-1.4) mmol/l.

*Which of the following investigations is most likely to reveal the diagnosis?*

- 1- Ultrasound of the kidneys
- 2- MRA of the renal arteries
- 3- BM stick
- 4- Urine dipstick and microscopy
- 5- DMSA scan

## Answer &amp; Comments

**Answer:** 4- Urine dipstick and microscopy

The most likely diagnosis is rhabdomyolysis and acute renal failure.

The history is suggestive along with hyperkalaemia, hypocalcaemia and hyperphosphataemia.

Urine dipstick will be positive for blood (myoglobinuria) but microscopy will not show red cells. A renal biopsy may also reveal the diagnosis. Treatment is with hydration (normal saline) and alkalisation of urine with sodium bicarbonate infusion.



## [ Q: 399 ] MRCPass - Nephrology

A man who is on antihypertensives has several symptoms and his medications require reviewing.

*Which one of the following is a complication of thiazide diuretic therapy?*

- 1- Neutrophilia
- 2- Hyperkalaemia
- 3- Gynaecomastia
- 4- Hyperuricaemia
- 5- Peptic ulceration

## Answer &amp; Comments

**Answer:** 4- Hyperuricaemia

Thiazides can cause thrombocytopenia, hypokalaemia (blocking NaCl channels), and hyperuricaemia. Gynaecomastia is caused by spironolactone.



## [ Q: 400 ] MRCPass - Nephrology

A 50 year old man presents with shortness of breath and ankle oedema.

Investigations show:

urea 7 µmol/l

creatinine 88 µmol/l

albumin 18 g/L

24 hour urinary protein excretion 10g (<0.2 g)

Renal biopsy showed normal glomeruli and renal tubule appearances with immunofluorescence.

*What is the likely diagnosis?*

- 1- Minimal change disease
- 2- Focal segmental glomerulosclerosis
- 3- Renal vein thrombosis
- 4- IgA nephropathy
- 5- Membranous nephropathy

## Answer &amp; Comments

**Answer:** 3- Renal vein thrombosis

Focal segmental glomerulosclerosis, membranous nephropathy, minimal change disease and IgA nephropathy would all show histological changes.

Renal vein thrombosis can present with nephrotic syndrome, haematuria, loin pain and worsening renal failure.

The most common cause is in fact, nephrotic syndrome. Other causes are renal cell cancer, renal transplantation, Behçet syndrome, hypercoagulable states, and antiphospholipid antibody syndrome. Treatment is with heparin/w arfarin.



[ Q: 401 ] MRCPass - Nephrology

*Which one of the following is the commonest cause of nephrotic syndrome in adults?*

- 1- Minimal change glomerulonephritis
- 2- Post streptococcal glomerulonephritis
- 3- IgA nephropathy
- 4- Membrano proliferative glomerulonephritis
- 5- Membranous nephropathy

## Answer &amp; Comments

**Answer:** 5- Membranous nephropathy

Membranous nephropathy is the commonest cause of the nephrotic syndrome in adults, whilst in children it is minimal change disease. The renal biopsy with membranous nephropathy shows a thickened glomerular basement membrane and granular IgG + C3 on immunostaining.



[ Q: 402 ] MRCPass - Nephrology

A 46 year old man had a right sided renal transplant 4 weeks ago. He has a creatinine which was 118 umol/l on day 1 post

transplant. Since the transplant, he has been on the following medications:

Cyclosporine 125 mg BD

Mycophenolate 1000 mg BD

Prednisone 20 mg od

He has, over the past week, been complaining of joint pains and upper abdominal pains. His temperature is currently 37.5°C and charts showed a fever for the last 3 days.

Blood results showed:

Hb 13.5 g/dl WCC  $2.8 \times 10^9/L$

platelets  $130 \times 10^9/L$  sodium 137 mmol/l

potassium 4.8 mmol/l urea 10 mmol/l

creatinine 127  $\mu\text{mol/l}$  ALT 88 (5-35) U/l

ALP 70 (20-120) U/l

Bilirubin 18 (1-22)  $\mu\text{mol/l}$

Serology results showed:

CMV IgM antibody – positive

EBV IgG antibody - positive

HIV test - positive.

*What is the likely cause of this presentation?*

- 1- CMV infection
- 2- EBV infection
- 3- Acute graft vs host disease
- 4- Pneumocystic carinii
- 5- Immunosuppressive drugs

## Answer &amp; Comments

**Answer:** 1- CMV infection

The patient is at high risk of CMV infection due to immunosuppression and HIV infection.

CMV infection post transplant can cause damage to the transplant graft and the presentation can be similar to graft rejection. Most cases of symptomatic CMV infection can be characterized by a self-limiting syndrome of episodic fever spikes for a period of 3 to 4

weeks, arthralgias, fatigue, anorexia, abdominal pain and diarrhea.

Blood tests often show leukopenia ( $<3 \times 10^9/l$ ), thrombocytopenia ( $150 \times 10^9/l$ ) and liver enzyme elevation (ALT  $>50$  U/l).

Acute transplant rejection usually occurs within 5-10 days of the transplant.

CMV is one of the pathogens that cause the most serious opportunistic viral infections in HIV-positive patients and is one of the most common causes of AIDS-related gastritis.



#### [ Q: 403 ] MRCPass - Nephrology

A 40 year old man with type 1 diabetes attends a follow up appointment in the diabetic clinic. He has a blood pressure of 145/86 mmHg. There is no evidence of diabetic retinopathy or neuropathy. He has an elevated albumin:creatinine ratio in his urine. Creatinine is  $90 \mu\text{mol/l}$ .

*Which of the following should be done?*

- 1- Intravenous urogram
- 2- Commence on an Angiotensin Receptor Blocker
- 3- Better glycaemic control
- 4- Consider a islet cell transplant
- 5- Review blood pressure in 2 months

#### Answer & Comments

Answer: 2- Commence on an Angiotensin Receptor Blocker

The patient has a raised albumin:creatinine ratio in the urine. He is likely to have microalbuminuria, which is a sign of risk to progressive diabetic nephropathy. Commencing an ARB to control hypertension has been shown to be of benefit in slowing the progression of nephropathy.



#### [ Q: 404 ] MRCPass - Nephrology

A 35 year old woman complains of renal colic.

*Which one of the following is the most common form of renal calculi?*

- 1- Calcium phosphate
- 2- Cystine
- 3- Calcium carbonate
- 4- Calcium oxalate
- 5- Urate

#### Answer & Comments

Answer: 4- Calcium oxalate

Calcium oxalate are the commonest (75%). Others are calcium phosphate (20%), urate (5%) and cystine (1%).



#### [ Q: 405 ] MRCPass - Nephrology

A 25 year old man has symptoms of lethargy. Blood results reveal a urea of  $32 \mu\text{mol/l}$  and creatinine of  $350 \mu\text{mol/l}$ .

*Which of the following indicates chronic (rather than acute) renal failure?*

- 1- Hyperkalaemia
- 2- heavy proteinuria
- 3- Urine osmolality of  $300 \text{ m osmol/kg}$
- 4- Hyponatraemia
- 5- Anaemia

#### Answer & Comments

Answer: 5- Anaemia

Anaemia (inadequate erythropoietin), renal osteodystrophy, small scarred kidneys suggest chronic rather than acute renal failure.



## [ Q: 406 ] MRCPass - Nephrology

A 50 year old woman who is morbidly obese presents with a plasma creatinine of 250 micromoles/l.

*Which form of disease is likely?*

- 1- Renal tubular acidosis
- 2- Focal segmental glomerulosclerosis
- 3- Nephritic syndrome
- 4- Membranous glomerulonephritis
- 5- Cholesterol emboli

## Answer &amp; Comments

Answer: 2- Focal segmental glomerulosclerosis

There is an association between severe obesity and focal segmental glomerulosclerosis.



## [ Q: 407 ] MRCPass - Nephrology

A 45 year old patient is admitted with decreased conscious level. She is oliguric and hyperventilating. Her investigations show : sodium 125, potassium 6.0, chloride 92 (95-107), Urea 15 mmol/l, creatinine 220 micromol/L, arterial blood gas pH 7.2, bicarbonate 16 mmol/l.

*What is the anion gap?*

- 1- 14
- 2- 16
- 3- 18
- 4- 23
- 5- 25

## Answer &amp; Comments

Answer: 4- 23

The anion gap is calculated with the formula  $(Na+K)-(Cl+HCO_3)$ . In this case it is  $125 + 6 - 92 - 16 = 23$ .

This example indicates high anion gap, possibly due to lactic acidosis or an overdose of a substance.



## [ Q: 408 ] MRCPass - Nephrology

A 50 year old man with a history of hypertension was investigated for renal impairment. Renal angiography confirms renal artery stenosis.

*Which one of the following features is an indication for stenting in renal artery stenosis?*

- 1- Flash pulmonary oedema
- 2- Abdominal bruit
- 3- Heavy proteinuria
- 4- Unilateral small kidney
- 5- Hypotension

## Answer &amp; Comments

Answer: 1- Flash pulmonary oedema

Revascularization is considered when the presence of hemodynamically significant renal artery stenosis is judged to be contributing to poorly controlled hypertension or progressive renal impairment. Other less common but equally important clinical indications for RAS revascularization include episodic pulmonary edema, congestive cardiac failure, and unstable angina.



## [ Q: 409 ] MRCPass - Nephrology

A 20 year old male has taken a drug overdose of multiple drugs.

*Which one of the following can be effectively removed by haemodialysis?*

- 1- Amiodarone
- 2- Digoxin
- 3- Phenytoin
- 4- Lithium
- 5- Paraquat



## Answer &amp; Comments

**Answer:** 4- Lithium

Drugs with a large volume of distribution are poorly dialysed. Haemodialysis is effective in lithium poisoning.



[ Q: 410 ] MRCPass - Nephrology

A 25 year male diagnosed type I diabetes.

*What are his chances of progressing towards End Stage Renal Disease (ESRD)?*

- 1- 10%
- 2- 25%
- 3- 50%
- 4- 75%
- 5- 100%

## Answer &amp; Comments

**Answer:** 3- 50%

In type I diabetes, there is a 50% chance of progressing towards ESRD. In type II diabetics, there is a 15% chance of doing so.



[ Q: 411 ] MRCPass - Nephrology

A 55 year old man has a creatinine of 280  $\mu\text{mol/l}$ . He mentions a 10 day history of loin pain and pink coloured urine. An ultrasound of the kidney suggests renal vein thrombosis.

*Which of the following conditions is most likely to be associated?*

- 1- Renal amyloidosis
- 2- Interstitial nephritis
- 3- Systemic sclerosis
- 4- Renal calculus
- 5- Reflux nephropathy

## Answer &amp; Comments

**Answer:** 1- Renal amyloidosis

Renal vein thrombosis is most commonly associated with nephrotic syndrome, the commonest due to membranous glomerulonephritis. Other causes are nephrotic syndrome due to amyloidosis, vasculitis, dehydration and congestive cardiac failure. Treatment is with anticoagulation, and when response is poor, thrombolysis and thrombectomy can be considered.



[ Q: 412 ] MRCPass - Nephrology

An 8 year old boy has bowing of the weight-bearing long bones.

*Which one of the following is a feature of X-linked hypophosphataemic vitamin D - resistant rickets?*

- 1- High serum phosphate
- 2- High urinary phosphate
- 3- High parathyroid hormone (PTH) levels
- 4- Hypercalcaemia
- 5- Low bicarbonate

## Answer &amp; Comments

**Answer:** 2- High urinary phosphate

In X-linked hypophosphataemic Vit D resistant rickets, serum phosphate is low and urine phosphate is high due to inappropriate renal phosphate wasting. Serum parathyroid levels are usually normal or slightly elevated. Clinically, the most obvious of these aspects is the effect on bone formation and growth that causes very severe rickets, especially in affected males. Treatment is with oral phosphate (difficult to tolerate) and high dose activated Vitamin D.



[ Q: 413 ] MRCPass - Nephrology

A 55 year old woman has end stage

renal failure and is being considered for dialysis.

*In which one of the following situations, might peritoneal dialysis be preferable to hemodialysis?*

- 1- In hypercatabolic patients
- 2- Recent abdominal wound
- 3- In patients bordering on respiratory failure
- 4- In diabetic patients
- 5- When there is a need to conserve plasma protein levels

#### Answer & Comments

Answer: 4- In diabetic patients

Peritoneal dialysis can be useful for intraperitoneal insulin administration.

Hemodialysis is preferable in hypercatabolic patients for rapid urea clearance. Stress is placed on the abdominal wound healing by PD, and on the diaphragm in respiratory failure. There is a loss of protein by diffusion in PD, hence less useful when protein needs to be conserved.



#### [ Q: 414 ] MRCPass - Nephrology

A 42 year old man is referred to the renal physician due to symptoms of haemoptysis and haematuria. These symptoms have been going on for 6 months. Investigations show:

sodium 135 mmol/l

potassium 4.6 mmol/l

urea 18 mmol/l

creatinine 260 µmol/l

*The likely disease is caused by an antibody against which of the following?*

- 1- Smooth muscle
- 2- DsDNA
- 3- Proteinase 3

4- Macrophages

5- Microfilaments

#### Answer & Comments

Answer: 3- Proteinase 3

The diagnosis would fit Wegener's granulomatosis, which is commonly cANCA positive. In patients with vasculitis, approximately 90 percent of cytoplasmic ANCA are PR3-ANCA and approximately 90 percent of perinuclear ANCA are MPO-ANCA.



#### [ Q: 415 ] MRCPass - Nephrology

A 45 year old woman presents with dipstick positive haematuria. Her blood tests reveal a urea of 25 µmol/l and creatinine of 260 µmol/l.

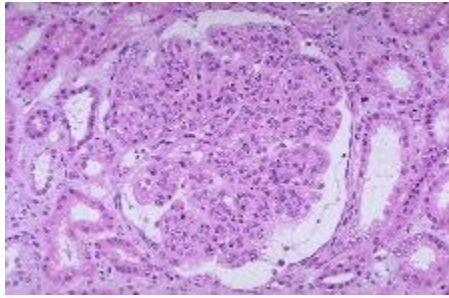
*Which of the following most strongly suggests post streptococcal glomerulonephritis?*

- 1- History of previous attacks
- 2- Papilloedema
- 3- Sore throat 10 days ago
- 4- Complete anuria
- 5- Nephrotic syndrome

#### Answer & Comments

Answer: 3- Sore throat 10 days ago

Post streptococcal glomerulonephritis is caused by Group A beta haemolytic streptococci. A second episode is unusual in those who have previously had the disease because there is good immunity to the cell wall proteins of Group A strep. Although features of hypertension with papilloedema, complete anuria and nephrotic syndrome can occur, the strongest predictor is the clinical history of sore throat suggesting infection with streptococci leading to nephritic syndrome.



This glomerulus is hypercellular and capillary loops are poorly defined in post streptococcal glomerulonephritis.



[ Q: 416 ] MRCPass - Nephrology

A 20 year old patient complains of ankle swelling and breathlessness. Her CXR shows pleural effusions.

Blood tests show :

urea 7  $\mu\text{mol/l}$

creatinine 80  $\mu\text{mol/l}$

sodium 138 mmol/l

potassium 4.2 mmol/l

alanine transferase 20 U/L

bilirubin 16  $\mu\text{mol/L}$

albumin 20 g/L (34-94)

total cholesterol 8.8 mmol/l

*What is the next best investigation?*

- 1- Ultrasound of liver
- 2- Antinuclear antibody
- 3- Urinary protein estimation
- 4- Renal biopsy
- 5- 24 hour urine creatinine clearance

Answer & Comments

Answer: 3- Urinary protein estimation

The high cholesterol and low albumin suggests nephrotic syndrome (>3g protein excretion in 24 hour urine collection).

The triad of features of nephrotic syndrome are:

Proteinuria

Hypoalbuminemia

Oedema

This is frequently accompanied by Hypercholesterolemia



[ Q: 417 ] MRCPass - Nephrology

A 45 year old man with no previous past medical history presents with a BP of 180/100 mm Hg, frothy urine and peripheral oedema. There is + blood and +++ protein on urinalysis. 24-hour protein loss is 5 grams.

Plasma albumin is 25 g/L. Plasma C3 is 0.10 (low). Plasma creatinine is 160  $\mu\text{mol/l}$ . A renal biopsy is performed.

*Which of the following is most likely to be found on the biopsy?*

- 1- Minimal change glomerulonephritis
- 2- Mesangiocapillary glomerulonephritis
- 3- IgA nephropathy
- 4- Post streptococcal glomerulonephritis
- 5- Focal segmental glomerulosclerosis

Answer & Comments

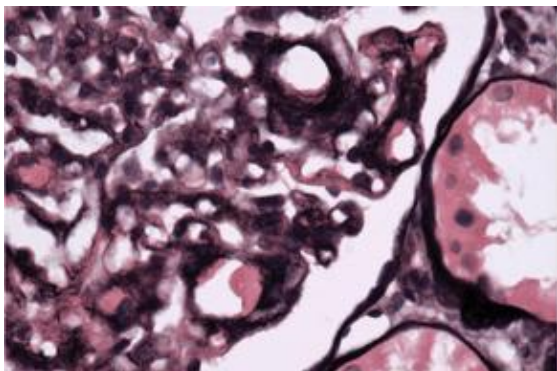
Answer: 2- Mesangiocapillary glomerulonephritis

This man has nephrotic syndrome (hypoalbuminaemia, oedema, and proteinuria). MCGN presenting in a young man with nephrotic syndrome and hypertension and hypocomplementaemia would fit best. Post streptococcal glomerulonephritis is possible but the infection should be clinically apparent, or in the history.

The two most common variants of MCGN are type I MCGN and type II MCGN (also called dense deposit disease).

Type I is much more common than type II, which is a rare disease. They are characterized

by capillary basement membrane thickening and mesangial cell proliferation. They are associated with low levels of C3. Mesangiocapillary glomerulonephritis is a significant cause of nephrotic syndrome in children (accounts for about 8% of cases) and adults (accounts for about 14%).



The figure shows MCGN with coarse granular deposition of IgA, IgM and C3.



[ Q: 418 ] MRCPass - Nephrology

A 60 year old lady has been noted for the first time to have renal impairment.

*Which of the following features is most useful in determining whether the renal failure is acute or chronic?*

- 1- Renal size of 7.5 and 8 cm
- 2- Hb of 12 g/dl
- 3- Blood pressure of 160/90
- 4- PTH level of 8 pmol/l
- 5- Phosphate of 2 mmol/l

Answer & Comments

**Answer:** 1- Renal size of 7.5 and 8 cm

Out of all the options small renal size is the best feature suggesting chronic renal failure.



[ Q: 419 ] MRCPass - Nephrology

A 15 year girl presents with a nonblanching rash over his shins and a swollen knee. He has noticed haematuria.

Blood test show a urea of 12  $\mu\text{mol/l}$  and creatinine 220  $\mu\text{mol/l}$ . Urine dipstick show s: blood +++, protein +.

*What is the renal biopsy likely to show ?*

- 1- Tubular necrosis
- 2- Podocyte fusion
- 3- Mesangial deposits of IgA
- 4- Thickening of basement membranes
- 5- Focal segmental sclerosis

Answer & Comments

**Answer:** 3- Mesangial deposits of IgA

The clinical presentation fits Henoch Schönlein purpura. This is an autoimmune disorder (cause unknown but associated with mycoplasma), which is related to multisystemic IgA deposition. It is usually a self-limited disease. It is the most common form of childhood vasculitis and results in inflammatory changes in small vessels.

The symptoms of Henoch-Schönlein Purpura usually begin suddenly and may include headache, fever, loss of appetite, cramping abdominal pain, and joint pain. Red or purple spots typically appear on the skin (petechial purpura). Inflammatory changes associated with Henoch-Schönlein Purpura can also develop in the joints, kidneys, digestive system, and, in rare cases, the brain and spinal cord. Mesangial Ig A deposits are typical features of HSP on the renal biopsy.



Henoch Schönlein Purpura



## [ Q: 420 ] MRCPass - Nephrology

A 50 year old lady has been diagnosed with type 2 diabetes, a year ago. Since the diagnosis was made, she was found to have pre-proliferative diabetic retinopathy. She has a history of rheumatoid arthritis and has been taking ibuprofen regularly for 6 years. She was referred for investigation of renal impairment.

The HbA1C is 9

urea 15 mmol/l

creatinine 200 µmol/l

Urine dipstick shows blood +, protein ++

*What is the likely diagnosis?*

- 1- Diabetic nephropathy
- 2- Amyloidosis
- 3- Chronic interstitial nephritis
- 4- Renal calculi
- 5- Acute analgesic nephropathy

## Answer &amp; Comments

Answer: 1- Diabetic nephropathy

Diabetic nephropathy, amyloidosis and chronic interstitial nephritis are all possible answers. The rationale is that the patient has had poorly controlled diabetes for a while in view of the high HbA1C and retinopathy, and has developed nephropathy.

Diabetic Nephropathy progresses over 10 to 25 years. Hyperfiltration without microalbuminuria appears initially and advances to a GFR 20 to 50% above normal and microalbuminuria > 300 mg/24 h. GFR normalizes with early renal injury and mild hypertension and progresses to frank hypertension, with proteinuria > 0.5 g/day. Heavy proteinuria and a progressive decline in renal function precedes end-stage renal disease.



## [ Q: 421 ] MRCPass - Nephrology

A 30 year old man had progressive deafness and hematuria from childhood and had undergone renal transplant eight years ago for chronic renal failure. Examination revealed perceptive high-tone deafness and posterior lenticonus in both eyes.

*What is the likely diagnosis?*

- 1- Neurofibromatosis type II
- 2- Romano Ward syndrome
- 3- Alport's syndrome
- 4- Adult polycystic kidney disease
- 5- Wegener's granulomatosis

## Answer &amp; Comments

Answer: 3- Alport's syndrome

Classic Alport's syndrome is an X linked disorder characterised by a triad of progressive hematuric nephritis, progressive perceptive high-tone hearing loss, and ocular signs (cataracts, spherophakia, and posterior lenticonus).



## [ Q: 422 ] MRCPass - Nephrology

A 14 year old boy presents with generalised oedema. There was no relevant past medical history.

Investigations revealed: Creatinine 75 µmol/l, Albumin 20 g/l, 24 hour urine protein excretion 3.2 g. Ultrasound scan shows normal renal size.

*Which of the following should the patient be treated with initially?*

- 1- Cyclophosphamide
- 2- Peritoneal dialysis
- 3- Thiazides
- 4- Haemodialysis
- 5- Prednisolone



## Answer &amp; Comments

**Answer:** 5- Prednisolone

The diagnosis is minimal change glomerulonephritis presenting with nephrotic syndrome. 80% of patients achieve remission with prednisolone therapy. Cyclophosphamide treatment can be started for those who are steroid resistant.



[ Q: 423 ] MRCPass - Nephrology

A 16 year old girl has presented with joint pains, abdominal pains and has a rash on her lower limbs.

Investigations show :

Urea 14 mmol/l

Creatinine 180  $\mu$ mol/l

Urine dipstick: blood ++, protein +

A renal biopsy was performed and results showed - IgA linear deposited in basement membrane.

*What is the diagnosis?*

- 1- Haemolytic uraemic syndrome
- 2- Goodpasture's syndrome
- 3- Wegener's granulomatosis
- 4- Henoch Schönlein purpura
- 5- IgA nephropathy

## Answer &amp; Comments

**Answer:** 4- Henoch Schönlein purpura

In Henoch Schönlein purpura, a purpuric rash typically appear on the lower extremities and buttocks, but may also involve the upper extremities, face and trunk, and are accentuated in areas of pressure. HSP nephritis usually presents as macroscopic hematuria and proteinuria lasting days to weeks.

These may be accompanied by increased plasma creatinine and/or hypertension, followed by microscopic hematuria. Of those

patients with renal involvement, as many as 10% may develop chronic renal failure and end-stage renal disease. Biopsy of affected renal tissue shows a spectrum of glomerular disease from minimal change to severe crescentic glomerulonephritis. IgA, C3, fibrin, properdin are seen as granular mesangial deposits on direct immunofluorescence.



[ Q: 424 ] MRCPass - Nephrology

A 25 year old woman has recurrent UTIs during childhood. She is now 28 weeks pregnant and has another episode of pyelonephritis. Her renal function is normal.

*What is the likely predisposing problem?*

- 1- Toxic shock syndrome
- 2- Renal calculi
- 3- Reflux nephropathy
- 4- Pre eclampsia
- 5- Polycystic kidneys

## Answer &amp; Comments

**Answer:** 3- Reflux nephropathy

Pyelonephritis is not a common presentation in pregnancy and should be treated aggressively with antibiotics. In a patient with recurrent childhood UTIs, reflux nephropathy predisposes to pyelonephritis due to renal scarring.



[ Q: 425 ] MRCPass - Nephrology

A 25 year old woman is in the third semester of pregnancy. She has several investigations for proteinuria.

*Which one of the following results is significant?*

- 1- GFR 140 ml/min
- 2- Urea 2 mmol/l
- 3- Uric acid 1.5 mmol/l
- 4- Creatinine 60  $\mu$ mol/l



5- Sodium 135 mmol/l

### Answer & Comments

Answer: 3- Uric acid 1.5 mmol/l

Normal uric acid level is < 0.4 mmol/l. A high uric acid level may indicate pre-eclampsia.



[ Q: 426 ] MRCPass - Nephrology

A 73 year old man presented with a two day history of a pruritic rash and oedema affecting both lower legs.

Examination showed non-palpable, non-tender purpura affecting both legs, with pitting oedema, and urticarial lesions on the left knee and anterior chest. Testing of urine was positive for protein and blood. Urine microscopy showed > 100 erythrocytes per 10<sup>6</sup>/l.

*What is the clinical scenario consistent with?*

- 1- Renal tubular acidosis
- 2- Nephrotic syndrome
- 3- Nephritic syndrome
- 4- Renal artery stenosis
- 5- Renal cell carcinoma

### Answer & Comments

Answer: 3- Nephritic syndrome

Acute nephritic syndrome most often results from infection by streptococcus.

Infectious causes of acute nephritic syndrome are:

staphylococcus

pneumococcus

chickenpox

malaria

Non infectious causes:

Membranoproliferative glomerulonephritis

IgA nephropathy

Henoch-Schönlein purpura

systemic lupus erythematosus

mixed cryoglobulinemia

Goodpasture's syndrome

Wegener's granulomatosis



[ Q: 427 ] MRCPass - Nephrology

A 45 year old man feels unwell following a sore throat and cough. He has a blood pressure of 170/90 mmHg.

Dipstick of his urine reveals blood ++ and protein ++. His blood tests show:

Hb 10.5 g/dl, MCV 85 fl, WCC 7 x 10<sup>9</sup>/L, platelets 200 x 10<sup>9</sup>/L, sodium 135 mmol/l, potassium 4.2 mmol/l, urea 15 μmol/l, creatinine 260 μmol/l, ALT 25 (5-35) U/l, AST 35 (1-35) U/l, ALP 75 (20-120) U/l, GGT 30 (4-35) U/l, Bilirubin 18 (1-22) μmol/l, Albumin 38 (37-49) g/l, calcium 2.1 (2.25-2.7) mmol/l, phosphate 7.5 (0.8-8) pmol/l. C3 - 0.5 g/L (0.8 - 1.6), C4 - 0.17 g/L (0.15 - 0.55). C3 nephritic factor is positive.

Ultrasound scan of his kidneys reveal a 8.5 cm length kidney on the left and 9.3 cm on the right.

*What is the diagnosis?*

- 1- Post streptococcal glomerulonephritis
- 2- Acute tubular necrosis
- 3- Membrano-proliferative glomerulonephritis
- 4- mesangiocapillary glomerulonephritis
- 5- Adult polycystic kidney disease

### Answer & Comments

Answer: 4- mesangiocapillary glomerulonephritis

The patient has chronic renal failure likely secondary to mesangiocapillary glomerulonephritis.

Membranoproliferative glomerulonephritis (MPGN) can present with the nephrotic syndrome, nephritic syndrome, or, most often, a mixture of the two.

The two most common variants of MPGN are type I MPGN (also called mesangiocapillary glomerulonephritis) and type II MPGN (also called dense deposit disease). Type I is much more common than type II. Patients with MPGN often have hypocomplementemia and a circulating autoantibody called C3 nephritic factor, which binds to the C3 convertase of the alternative pathway. It causes inactivation of C3 in the alternate pathway by cleaving C3 into two inactive fragments, C3c and C3d, instead of the normal C3b.

Although the clinical scenario may fit post streptococcal glomerulonephritis, Mesangiocapillary GN is more likely because C3 nephritic factor is not usually associated with acute poststreptococcal glomerulonephritis.



[ Q: 428 ] MRCPass - Nephrology

An 18 year old male has had a 5 year history of renal failure.

On examination, he had hilar adenopathy, but maculopapular rashes, erythema nodosum, arthritis, chronic lymphocytopenia, hepatomegaly, splenomegaly.

A renal biopsy specimen revealed tubulointerstitial nephritis and non caseating granulomatous lesions.

*What is the diagnosis?*

- 1- Wegener's granulomatosis
- 2- Lupus nephritis
- 3- Renal tuberculosis
- 4- Sarcoidosis
- 5- Renal calculi

Answer & Comments

Answer: 4- Sarcoidosis

Sarcoidosis is a chronic, multi-system granulomatous disorder of unknown etiology characterized by non-caseating granulomas. The most commonly affected organ is the lung, other organs include the lymph nodes, skin, eyes, parotid glands, bones, joints, liver and kidney. Patients mostly present with respiratory symptoms, or joint and skin manifestations.

Renal involvement and presentation with renal failure are relatively rare in sarcoidosis. Renal sarcoidosis is reported to have three categories: 1) renal changes by abnormal calcium metabolism, 2) interstitial nephritis or granulomatous nephritis or granulomatous nephritis and 3) glomerulonephritis (mostly membranous).



[ Q: 429 ] MRCPass - Nephrology

A 35 year man has been referred for management of hypertension. On examination he had palpable kidneys. This was confirmed by abdominal ultrasound which showed multiple cysts.

*Which of the following is likely to be associated?*

- 1- Polycythaemia
- 2- Nail pitting
- 3- Hypermobility
- 4- Mitral stenosis
- 5- Hypogonadism

Answer & Comments

Answer: 1- Polycythaemia

Polycystic kidney disease is associated with increased levels of EPO which lead to polycythaemia. Aneurysms of cerebral arteries (berry aneurysms) have been reported in 10-50% of patients. A variety of cardiac and aortic abnormalities have been associated with APKD, including aortic root dilatation, aortic regurgitation, bicuspid aortic valves,

coarctation of the aorta, mitral regurgitation and abdominal aortic aneurysm.



[ Q: 430 ] MRCPass - Nephrology

A 30 year old lady has haematuria on the dipstick and was referred by the GP for further investigation. She eventually has a renal biopsy which shows mesangial hypercellularity with IgA deposition.

*What is the diagnosis?*

- 1- Mesangiocapillary glomerulonephritis
- 2- IgA nephropathy
- 3- HIV nephropathy
- 4- Nephrotic syndrome
- 5- Interstitial nephritis

Answer & Comments

Answer: 2- IgA nephropathy

The diagnosis is IgA nephropathy. IgA nephropathy is the commonest glomerulonephritis but only 30% progress towards end stage renal failure. It rarely causes nephrotic syndrome, and more commonly presents with microscopic haematuria. HIV is associated with a focal segmental and immune complex glomerulonephritis.



[ Q: 431 ] MRCPass - Nephrology

A 27 year old lady who is 20 weeks pregnant is found to have 2+ proteinuria on dipstick. Her blood pressure is 155/80 mmHg. Creatinine is 100 µmol/L. A 24 hour urinary protein excretion was measured at 1.6 g. She is commenced on labetalol and her blood pressure is controlled. Ultrasound of the kidneys show normal size.

Following the pregnancy she has an intravenous urogram which shows scarring in the upper pole of the left kidney.

*What is the likely diagnosis?*

- 1- Reflux nephropathy
- 2- Minimal change glomerulonephritis
- 3- IgA nephropathy
- 4- Hypertensive nephropathy
- 5- Membranous nephropathy

Answer & Comments

Answer: 1- Reflux nephropathy

Reflux nephropathy can lead to proteinuria, renal impairment and hypertension. Pregnancy can precipitate the symptoms.

The pathology may be due to reflux of infected urine, incompetent vesico-ureteric valves or abnormal renal papillae which result in intra-renal reflux. Grades I and II reflux are managed conservatively, with improved hygiene, high fluid intake and regular voiding. Grades III and IV reflux require surgical management - ie correction of the underlying abnormality. This is by tunneling the ureter through the bladder wall.



[ Q: 432 ] MRCPass - Nephrology

A 30 year old man has returned from a trip to India recently. He presents with bloody diarrhoea which started three weeks ago. He now has malaise and swelling of his legs. He has poor urine output. Blood tests show:

Hb 8 g/dL  
 White cell count  $14 \times 10^9/L$   
 Neutrophils  $9 \times 10^9/L$   
 Platelets  $20 \times 10^9/L$   
 PT 13s, APTT 33s  
 Fibrinogen 4 g/dL  
 sodium 136 mmol/L  
 potassium 6.1 mmol/L  
 urea 30 mmol/L  
 creatinine 440 µmol/L

albumin 30 g/L.

Urine dipstick: blood ++, protein +.

*What is the next best investigation to confirm the likely diagnosis?*

- 1- Renal biopsy
- 2- Stool culture
- 3- MRA of kidneys
- 4- Ultrasound of kidneys
- 5- 24 hour urine collection for creatinine clearance

#### Answer & Comments

**Answer:** 2- Stool culture

The diagnosis is haemolytic uraemic syndrome (HUS). The typical presentation is with a triad of acute renal failure, Microangiopathic haemolytic anaemia and thrombocytopenia. Most commonly the cause is E coli 0157 (verotoxin producing E coli), hence stool cultures would be the best investigation to confirm the diagnosis in this case. Other causes are shigella, ciclosporin and connective tissue diseases. The thrombocytopenia is thought to be a consequence of platelet consumption at sites of endothelial injury. Despite this blood clotting times (prothrombin time, kaolin clotting time) are normal.



#### [ Q: 433 ] MRCPass - Nephrology

A 30-year-old female with chronic urinary tract infections presents for investigations. Ultrasound scan reveals scarring over the renal calyces.

*Which one of the following is most likely?*

- 1- Analgesic nephropathy
- 2- Polycystic kidney disease
- 3- Nephrotic syndrome
- 4- Post streptococcal glomerulonephritis
- 5- Reflux nephropathy

#### Answer & Comments

**Answer:** 5- Reflux nephropathy

The term chronic pyelonephritis due to reflux nephropathy is reserved for a condition resulting from long-standing vesicoureteral reflux and infection leading to chronic interstitial nephritis and parenchymal scarring. This condition usually begins in childhood and occurs more frequently in females.



#### [ Q: 434 ] MRCPass - Nephrology

A 44 year old renal transplant recipient has been on prednisolone and azathioprine for several months. He has suddenly developed a cough and fevers. On investigation, he was found to have a Hb of 9 g/dl and a WCC of  $3 \times 10^9/L$ .

*What is the most likely cause?*

- 1- Pneumonia
- 2- Prednisolone
- 3- Low EPO
- 4- Folate deficiency
- 5- Azathioprine

#### Answer & Comments

**Answer:** 5- Azathioprine

Immunosuppressives used in renal transplant can often cause a pancytopenia. In this case, azathioprine, which is well known to cause bone marrow suppression had led to the predisposition towards infection.



#### [ Q: 435 ] MRCPass - Nephrology

A 12 year old male was admitted to the emergency department with significant lethargy which had worsened over the past year.

On examination he was conscious and orientated. His heart rate was 70 beats per minute, blood pressure was 120/70mmHg and

he was afebrile. Clinical examination of the abdomen revealed minimal no organomegaly.

His haemoglobin is 11.2 g/dL, white cell count of  $8.2 \times 10^9/L$  and a platelet count of  $365 \times 10^9/L$ . The plasma urea was 11.1 mmol/L, creatinine 117  $\mu\text{mol/L}$ , sodium 132 mmol/L, potassium 2.3 mmol/L, bicarbonate 8 mmol/L.

The plasma liver function tests were within normal limits. His electrocardiogram demonstrated U waves.

*Which one of the following is the likely diagnosis?*

- 1- ACE inhibitor therapy
- 2- Liddle's syndrome
- 3- Pituitary tumour
- 4- Renal artery stenosis
- 5- Ciclosporin treatment

#### Answer & Comments

Answer: 2- Liddle's syndrome

Liddle's syndrome is caused by a mutation in the sodium channel (ENaC) in the distal nephron.

There is increased sodium reabsorption and potassium loss. Hence the condition is characterised by hypokalaemic alkalosis, hypertension, and negligible aldosterone secretion. Treatment is with triamterene. The condition is also sometimes called pseudohyperaldosteronism.

Hypokalemia with a metabolic alkalosis may be due to vomiting, excess nasogastric fluid loss, hyperaldosteronism, Bartter's syndrome, Gitelman's variant, Liddle's syndrome (pseudoaldosteronism), Cushing's syndrome, ectopic corticotropin producing tumours, VIPoma, mineralocorticoid excess, excess liquorice intake and diuretics.



[ Q: 436 ] MRCPass - Nephrology

A 45 year old man presented with a

3-week history of malaise, fever and shivering. Urine dipstick showed microscopic haematuria.

Over the next week, his blood urea rose steadily from 10 to 23 mmol/l (NR 2.5-7.5) and the serum creatinine from 164 to 515  $\mu\text{mol/l}$  (NR 60-120). His haemoglobin was 9 g/l, white cell count of  $10.4 \times 10^9/L$ .

His urine contained red cell casts and he rapidly became oliguric. Antinuclear antibodies, including anti-DNA antibodies, were not detected and serum C3 and C4 levels were normal.

A renal biopsy specimen contained seven glomeruli: four showed focal necrotizing glomerulonephritis with epithelial crescents but the remaining three were normal. On immunofluorescence, linear staining with IgG was present along the glomerular capillary basement membrane.

*What is the diagnosis?*

- 1- Lupus nephritis
- 2- Interstitial nephritis
- 3- Wegener's granulomatosis
- 4- Anti GBM disease
- 5- IgA nephropathy

#### Answer & Comments

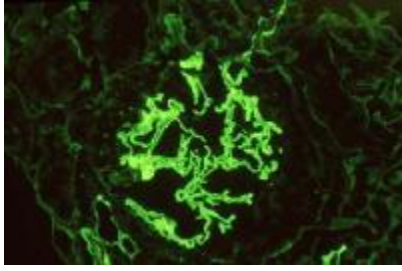
Answer: 4- Anti GBM disease

Antiglomerular basement membrane (anti-GBM) antibody disease is a rare autoimmune disorder in which circulating antibodies are directed against an antigen normally present in the GBM and alveolar basement membrane.

Presentation is with haemoptysis, haematuria, fever, malaise, weight loss, and fatigue.

At immunofluorescent microscopy of renal biopsy specimens, the linear deposition of IgG along the glomerular capillaries and, occasionally, the tubules is nearly pathognomonic.





Immunofluorescence staining for IgG reveals diffuse high-intensity linear staining of the glomerular basement membrane in a patient with anti-GBM disease.



[ Q: 437 ] MRCPass - Nephrology

A 20 year old man had type 1 diabetes for 5 years. He now presents with leg oedema. On investigations, he was found to have a urinary protein of 5 g/24 hours and serum cholesterol 8 mmol/l.

*What is the most likely diagnosis.*

- 1- Diabetic nephropathy
- 2- IgA nephropathy
- 3- Post streptococcal glomerulonephritis
- 4- SLE
- 5- Minimal change disease

Answer & Comments

Answer:

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[ Q: 438 ] MRCPass - Nephrology

A 40 year old man has proteinuria with a dipstick demonstrating +++ of protein. He has a history of diabetes, and a albumin of 26 g/l. A physician suspects membranous glomerulonephritis.

*Which of the following is likely to support this diagnosis?*

- 1- Selective proteinuria
- 2- IgM deposits around the renal tubules
- 3- Recent streptococcal throat infection
- 4- Renal vein thrombosis

- 5- Dialysis dependent renal failure never occurs

Answer & Comments

Answer: 4- Renal vein thrombosis

Selective proteinuria is more of a feature in minimal change glomerulonephritis.

Membranous glomerulonephritis accounts for 1/3 of patients with nephritic syndrome. The renal biopsy shows IgG and C3 subepithelial deposition on the basement membrane. Streptococcal infection suggests nephritic syndrome, which would present with haematuria predominantly. End stage renal failure occurs in 1/3 of patients and if so, immunosuppressants such as cyclophosphamide, steroids and chlorambucil are recommended. Renal vein thrombosis occurs in about 10% of patients with nephrotic syndrome and membranous glomerulonephritis.



[ Q: 439 ] MRCPass - Nephrology

A 20 year old man presented with an 18-month history of intermittent, painless haematuria, usually occurring after strenuous exercise, but without dysuria or increased frequency of micturition. He also had frequent colds and sore throats and believed that the haematuria increased at these times.

On examination, he appeared fit and healthy; his blood pressure was 150/75. Urine analysis showed microscopic haematuria (3+) and a trace of protein. Intravenous urography, a micturating cystogram and cystoscopy were normal. His haemoglobin, white-cell count, blood urea and creatinine clearance were normal; the urinary protein excretion was 0.95g/day. Immunoglobulin, CH50, C4 and C3 levels were within normal limits.

In view of the duration of haematuria, a renal biopsy was performed. The glomeruli showed a diffuse increase in mesangial cells with thickening of the matrix. Immunofluorescent



examination of the biopsy showed mesangial deposits of IgA and C3.

*What treatment should be commenced?*

- 1- Frusemide
- 2- Ramipril
- 3- Ciclosporin
- 4- Tacrolimus
- 5- Amoxycillin

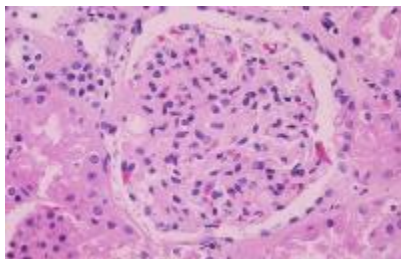
#### Answer & Comments

Answer: 2- Ramipril

IgA nephropathy (Berger's disease) is the most common glomerulonephritis worldwide. There are mesangial IgA deposits in the kidney. Presentation may be with a rash, frank haematuria after an episode of pharyngitis, arthritis or symptoms of acute renal failure.

Although it is a benign disease in most patients, chronic renal failure and ESRD occur in about 20-40% of patients.

Currently, no cure exists for IgA nephropathy, but therapies that can delay the onset of need for dialysis and transplantation are available. ACE inhibitors are the preferred agents for lowering blood pressure.



Light microscopy of a glomerulus from a patient with immunoglobulin A nephropathy showing increased mesangial matrix and cellularity



[ Q: 440 ] MRCPass - Nephrology

A 25 year lady has a butterfly rash and arthralgia. Her blood pressure is 170/95.

Investigations reveal: urea 7 mol/l, creatinine 90 umol/L, anti dsDNA antibodies - strongly positive, 24 hour urinary protein excretion 2.5 g.

A renal biopsy shows membranous nephropathy.

*What is the most suitable treatment?*

- 1- Azathioprine
- 2- Lisinopril
- 3- Calcium phosphate
- 4- Ibuprofen
- 5- Insulin

#### Answer & Comments

Answer: 2- Lisinopril

In lupus nephritis with membranous nephropathy, ACE inhibitors and steroids (prednisolone) have been shown to slow the progression towards worsening nephrotic syndrome.



[ Q: 441 ] MRCPass - Nephrology

A 15 year old female presents with a short history of sudden onset of severely swollen ankles. She is otherwise well, and urinalysis shows +++ protein. A urine collection shows that she is excreting 5g protein per 24 hours, the plasma albumin is 23 g/l, creatinine 90.

*What is the most likely underlying diagnosis?*

- 1- Minimal change nephrotic syndrome
- 2- Focal Segmental glomerulosclerosis
- 3- IgA nephropathy
- 4- Membranous nephropathy
- 5- Mesangiocapillary glomerulonephritis

#### Answer & Comments

Answer: 1- Minimal change nephrotic syndrome

The patient has nephrotic syndrome and at this age the commonest underlying diagnosis on renal biopsy is minimal change nephrotic syndrome. This would also be consistent with the lack of haematuria, the sudden onset and the normal excretory renal function.

Minimal change nephropathy is responsible for 90% of the cases of nephrotic syndrome in children less than 5 years of age. It also occurs in adults - approx 20%. The name is derived from the fact that the only detectable abnormality histologically is fusion and deformity of the foot processes under the electron microscope. Minimal Change Disease is steroid-responsive and in general, does not lead to chronic renal failure.



[ Q: 442 ] MRCPass - Nephrology

A 57 year old man with diabetic nephropathy has a plasma creatinine of 380µmol/l.

He has the following blood results : potassium 5.2 mmol/l, calcium 2.20 mmol/l, albumin 42 g/l, phosphate 1.55 mmol/l, and PTH 1.6 pmol/l (NR 1.1-6.8).

*Which of the following should be commenced?*

- 1- Alucaps
- 2- Thyroxine
- 3- Vitamin A
- 4- Alfacalcidol
- 5- Calcium acetate

Answer & Comments

Answer: 5- Calcium acetate

Alfacalcidol could be considered for prophylaxis against renal bone disease and progressive hyperparathyroidism. However, the patient's phosphate level is already elevated, and vitamin D supplementation may increase this further.

Aluminium-containing phosphate binders (alucaps) carry the risk of aluminium accumulation and CNS effects.

Calcium acetate or calcium carbonate can be used. It should be taken with (or just before) meals and may offer advantages over calcium carbonate.



[ Q: 443 ] MRCPass - Nephrology

A 35 year old man has been given some painkillers by his GP for pleuritic chest pains following a chest infection.

2 weeks later he presents again with ankle oedema.

His blood pressure is 130/70 mmHg, and urine dipstick reveals protein +++ and no blood. Plasma creatinine is 145 µmol/l.

*What is the likely diagnosis?*

- 1- Renal amyloidosis
- 2- Membranous nephropathy
- 3- Interstitial nephritis
- 4- Focal segmental glomerulosclerosis
- 5- Minimal change nephropathy

Answer & Comments

Answer: 3- Interstitial nephritis

The most frequent causes of acute interstitial nephritis can be found in one of three general categories:

drug-induced (NSAID, anti TB drugs, sulphonamides), infection-associated (legionella, HIV, Hep C) cases associated with immune or neoplastic disorders (SLE, Sjogrens, Wegeners).

The clinical presentation can range from asymptomatic elevation in creatinine or blood urea or abnormal urinary sediment, to generalized hypersensitivity syndrome with fever, rash, eosinophilia, and oliguric renal failure.

Proteinuria is much more common in NSAID-induced nephritis than other causes. Resolution of proteinuria should occur with discontinuation of NSAID drugs, although steroids can be used in cases of heavy proteinuria.



[ Q: 444 ] MRCPass - Nephrology

A 45 year old patient with chronic hepatitis C has now developed hypotension and oliguria. His liver and renal function tests suggest hepatorenal syndrome.

*Which of the following measures is likely to improve his prognosis?*

- 1- Renal transplantation
- 2- Liver transplantation
- 3- TIPSS
- 4- Loop diuretics
- 5- Haemodialysis

Answer & Comments

Answer: 2- Liver transplantation

Hepatorenal syndrome is due to reduced renal cortical perfusion, caused by accumulation of toxins which would normally be cleared by the liver. Liver transplantation is the only option which would provide a resolution of this problem.



[ Q: 445 ] MRCPass - Nephrology

A 70 year old woman is referred for investigation of a creatinine of 250 micromol/l. She mentioned several episodes of haematuria. She has a long history of low back pain treated with a combination of painkillers. An ultrasound shows two irregular shaped kidneys sized 8.5 and 9 cm.

*Which of the following is the most likely?*

- 1- Minimal change nephropathy
- 2- Diabetic nephropathy
- 3- Membranous glomerulonephritis

4- IgA nephropathy

5- Analgesic nephropathy

Answer & Comments

Answer: 5- Analgesic nephropathy

Analgesic nephropathy is usually a result of prolonged or chronic ingestion of analgesics, especially over-the-counter (OTC) medications that contain phenacetin or acetaminophen and nonsteroidal antiinflammatory drugs (NSAIDs) including aspirin or ibuprofen. The ingestion may have been excessive over a period of years. This frequently occurs as a result of self-medication, often for some type of chronic pain.

There is interstitial nephritis and renal papillary necrosis, eventually leading to acute renal failure or chronic renal failure. There may be haematuria but minimal or no proteinuria.



[ Q: 446 ] MRCPass - Nephrology

A 65 year old man is being considered for dialysis.

*Which of the following suggests that the patient should be considered for CAPD rather than haemodialysis?*

- 1- Hypertension
- 2- Severe congestive cardiac failure
- 3- Recent inguinal surgery
- 4- COPD
- 5- Glomerulonephritis

Answer & Comments

Answer: 2- Severe congestive cardiac failure

Severe cardiac failure often leads to circulatory compromise (hypotension) during haemodialysis, hence such a patient would be better dialysed by CAPD.



## [ Q: 447 ] MRCPass - Nephrology

A 30 year old intravenous drug user who is HIV positive, presents with oedematous ankles and breathlessness.

There is no history of diabetes. He has a urea of 13  $\mu\text{mol/l}$ , creatinine of 140  $\mu\text{mol/l}$ . AST is 25 U/l, ALP is 120 U/l, bilirubin 18  $\mu\text{mol/l}$  and albumin is 25 g/l. A 24 hour urine protein is 5.5g in total.

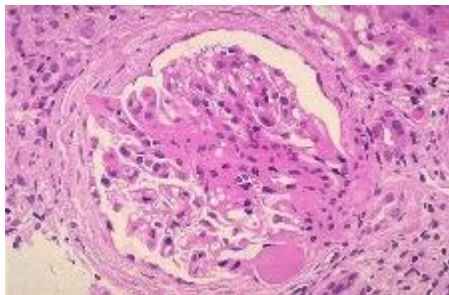
*Which of the following is the likely diagnosis?*

- 1- Focal segmental glomerulosclerosis
- 2- Minimal change nephropathy
- 3- Membranoproliferative glomerulonephritis
- 4- Nephritic syndrome
- 5- Post streptococcal glomerulonephritis

## Answer &amp; Comments

Answer: 1- Focal segmental glomerulosclerosis

Focal segmental glomerulosclerosis is commonly associated with HIV positive patients and in view of the history this should be excluded. The other causes of nephrotic syndrome are minimal change, membranoproliferative, and membranous glomerulonephritis.



Focal segmental glomerulosclerosis (FSGS). An area of collagenous sclerosis runs across the middle of this Glomerulus



## [ Q: 448 ] MRCPass - Nephrology

A 15 year boy presents with Henoch Schönlein purpura related renal impairment with a creatinine of 200  $\mu\text{mol/l}$ .

*What is the likely outcome in the long term?*

- 1- Intermittent haematuria
- 2- Normal renal function
- 3- Recurrent urinary tract infections
- 4- Renal scarring
- 5- Progression towards renal cell carcinoma

## Answer &amp; Comments

Answer: 2- Normal renal function

Henoch Schönlein Purpura causes a nephritis which is related to IgA deposition and vasculitis. It is self limiting and the long term prognosis is good, with likely recovery of renal function.



## [ Q: 449 ] MRCPass - Nephrology

A 60 year old man presents with severe pain in his left loin radiating to the left groin. Bedside testing of urine demonstrates haematuria. Abdominal ultrasound does not demonstrate any abnormality and X-ray KUB does not show any visible stones.

*Which form of calculus might the patient have?*

- 1- Calcium oxalate stone
- 2- Cystine stone
- 3- Uric acid stone
- 4- Triple phosphate stone
- 5- Calcium phosphate stone

## Answer &amp; Comments

Answer: 3- Uric acid stone

Radiopaque stones are: Calcium oxalate, calcium phosphate, triple phosphate, cystine stones.

Radiolucent stones are: Uric acid, xanthine stones.



## [ Q: 450 ] MRCPass - Nephrology

A 45 year old man presents with recurrent sinusitis for over a year and occasionally noticed a rash on his chest.

Routine blood tests show that he has a serum urea of 14 mmol/l and creatinine of 180 micromoles/l.

*Which of the following is the most likely?*

- 1- Minimal change nephropathy
- 2- Systemic vasculitis
- 3- Membranous glomerulonephritis
- 4- Goodpasture's syndrome
- 5- Focal segmental glomerulosclerosis

## Answer &amp; Comments

Answer: 2- Systemic vasculitis

This patient is likely to have vasculitis related to Wegener's granulomatosis.

Sinusitis can arise from involvement of the nasal tract and sinuses in the Wegener's pattern of the disease.

Often a patient with systemic vasculitis will have a long history of indolent disease, but will then present late with severe aggressive disease. Serum anti-neutrophil cytoplasmic antibodies (ANCA) and antibodies against the ANCA antigens myeloperoxidase and proteinase 3 may be positive.



## [ Q: 451 ] MRCPass - Nephrology

A 57 year old man has presented with chest pain and pulmonary oedema. He is managed as acute coronary syndrome. He did not tolerate a GTN infusion as his blood pressure was 85/60 but improved with frusemide and his blood pressure stabilized. An ACE-inhibitor was held off due to renal impairment. He is coincidentally found to have a chest infection, his blood cultures grew streptococci and he was treated with augmentin. His blood tests on admission show

a creatinine of 145  $\mu\text{mol/l}$  rising up to 190 $\mu\text{mol/l}$  and then 250 $\mu\text{mol/l}$  the day after.

*What is the likely cause of renal failure?*

- 1- Urinary tract infection
- 2- Acute tubular necrosis
- 3- Interstitial nephritis due to augmentin
- 4- Post streptococcal glomerulonephritis
- 5- Renal artery stenosis

## Answer &amp; Comments

Answer: 2- Acute tubular necrosis

A rapid rise in creatinine following periods of hypotension is most commonly due to acute tubular necrosis. Acute tubular necrosis or (ATN) involves the death of tubular cells that form the tubule that transports urine to the ureters while reabsorbing 99% of the water. Tubular cells continually replace themselves and if the cause of ATN is removed then recovery is likely.



## [ Q: 452 ] MRCPass - Nephrology

A 65 year old man has hypertension. On examination of his abdomen a bruit is audible in the epigastrium.

Urinalysis shows : Proteins ++ Abdominal ultrasound reveals a difference in size between the two kidneys of 2.0 cms in length.

*What is the likely diagnosis?*

- 1- Glomerulonephritis
- 2- Nephritic syndrome
- 3- Renal artery stenosis
- 4- Pheochromocytoma
- 5- Fibrous dysplasia

## Answer &amp; Comments

Answer: 3- Renal artery stenosis



Hypertension, renal bruit and a difference in renal sizes are suggestive of renal artery stenosis.



[ Q: 453 ] MRCPass - Nephrology

A 45 year old man has a history of hypertension. He now presents with frank haematuria which has been present for 6 months. His blood results show a urea of 16 mmol/l and creatinine 180 micromoles/l.

*Which of the following is the most likely diagnosis?*

- 1- Focal segmental glomerulosclerosis
- 2- IgA nephropathy
- 3- Acute tubular necrosis
- 4- Nephritic syndrome
- 5- Wegener's granulomatosis

Answer & Comments

Answer: 2- IgA nephropathy

IgA nephropathy is the commonest glomerulonephritis worldwide. IgA nephropathy or Berger's disease is a clinical/pathological entity defined by the presence of macroscopic or microscopic hematuria and mesangial IgA deposits. Signs and symptoms include proteinuria, nephrotic syndrome, acute nephritis, malignant hypertension, chronic renal failure, and acute renal failure.

Proteinuria is typically within the mild range. There is a 2:1 male predominance. Findings on renal biopsy are characteristic. In all patients, IgA is present and is deposited mainly in the mesangium of the glomerular tuft. Other immunoglobulins and complement, especially C3, are often found in a mesangial pattern.



[ Q: 454 ] MRCPass - Nephrology

A 16 year old boy has had progressive high tone deafness since childhood. Investigations reveal:

urea 27  $\mu$ mol/l

creatinine 310  $\mu$ mol/l

Urine dipstick: blood + and protein ++

*Which one of the following is most likely?*

- 1- Wegener's granulomatosis
- 2- Tuberous scleriosis
- 3- Alports syndrome
- 4- Sarcoidosis
- 5- Von Hippel Lindau disease

Answer & Comments

Answer: 3- Alports syndrome

Classic Alport's syndrome is an X linked disorder characterised by a triad of progressive hematuric nephritis, progressive perceptive high-tone hearing loss, and ocular signs (lenticonus and cataracts). There is associated nephrotic syndrome in 30% of patients. Average progression to end stage renal failure is 30 years.



[ Q: 455 ] MRCPass - Nephrology

A 70 year old male with a three month history of constitutional symptoms including weight loss, night sweats, fatigue and malaise presents with rapidly progressive acute renal failure, hemoptysis and diffuse bilateral pulmonary infiltrates.

Biopsy demonstrates a pauci-immune focal segmental proliferative, necrotizing and sclerosing glomerulonephritis with crescent formation and a superimposed necrotizing and granulomatous arteritis involving small intrarenal arteries.

*What is the likely diagnosis?*

- 1- Polyarteritis nodosa
- 2- Anti GBM disease
- 3- Post streptococcal glomerulonephritis
- 4- Interstitial nephritis
- 5- Wegener's granulomatosis



## Answer &amp; Comments

**Answer:** 5- Wegener's granulomatosis

The clinicopathologic differential diagnosis includes predominantly the microscopic form of polyarteritis nodosa (polyarteritis nodosa with glomerular involvement) and Wegener's granulomatosis. The presence of extrarenal (pulmonary) involvement and granulomatous vasculitis favors Wegener's granulomatosis.

Crescentic glomerulonephritis or rapidly progressive glomerulonephritis (RPGN) is a term given to a diverse group of diseases which all have crescents present within the glomerular tuft. These include primary or renal limited (so-called idiopathic) crescentic glomerulonephritis, anti-glomerular basement membrane (anti-GBM) antibody diseases, and systemic disorders. Light microscopic examination typically shows at least 30% of the glomeruli involved by crescents.



## [ Q: 456 ] MRCPass - Nephrology

A 35 year old man presents with hypertension. On examination he had palpable kidneys and abdominal ultrasound shows bilaterally enlarged cystic kidneys.

*Which of the following features is likely to be associated?*

- 1- Testicular atrophy
- 2- Nail dystrophy
- 3- Mitral stenosis
- 4- Polycythaemia
- 5- Short stature

## Answer &amp; Comments

**Answer:** 4- Polycythaemia

In adult polycystic kidney disease, the most common presentation is a palpable mass, hypertension, abdominal pain, and hematuria. Hypertension often predates renal failure. Polycythemia is a rare but known association

secondary to increased erythropoietin production.



## [ Q: 457 ] MRCPass - Nephrology

A 52 year old man with chronic renal failure has been on EPO injections 3 times a week for several years.

*Which one of the following is a side effect of erythropoietin therapy?*

- 1- Hypokalaemia
- 2- Anaemia
- 3- Seizures
- 4- Iron overload
- 5- Osteoporosis

## Answer &amp; Comments

**Answer:** 3- Seizures

EPO therapy may lead to hypertension and seizures. Other side effects of treatment with erythropoietin include hyperkalaemia in uraemic patients, increased PCV, thrombocythaemia, shunt thrombosis, iron deficiency and urticaria.



## [ Q: 458 ] MRCPass - Nephrology

A 55 year old man presents with chest pain and is thrombolysed for an acute myocardial infarction. His blood pressure was 85/40 for several hours on admission. Two days later his blood tests show a urea of 22 mmol/l and creatinine of 300 µmol/l (U+Es were normal on admission).

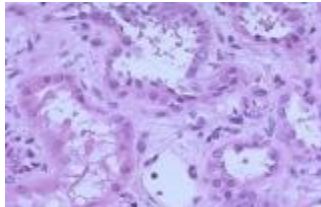
*What would a renal biopsy show?*

- 1- Positive antibody to fibrinogen
- 2- Thickened capillary loops
- 3- Loss of tubular cells
- 4- IgG deposition in the basement membrane
- 5- IgA mesangial deposits

## Answer &amp; Comments

**Answer:** 3- Loss of tubular cells

Due to hypoperfusion, acute tubular necrosis may occur. This would show necrosis or loss of tubular cells.



The epithelium of the tubules seen here is ragged from undergoing necrosis with acute tubular necrosis (ATN) from ischemia.



[ Q: 459 ] MRCPass - Nephrology

A 65 year old man has renal bruits, renal impairment and hypertension.

*Which one of the following tests is most appropriate?*

- 1- Intravenous urography
- 2- Renal DTPA nuclear scan
- 3- Renal DMSA nuclear scan
- 4- Renal ultrasound scan
- 5- Magnetic resonance angiography (MRA) of renal arteries

## Answer &amp; Comments

**Answer:** 5- Magnetic resonance angiography (MRA) of renal arteries

For renal artery stenosis, MRA remains the best investigation with high sensitivities and specificities.



[ Q: 460 ] MRCPass - Nephrology

A 50 year woman who is on peritoneal dialysis has a plasma potassium of 6.5 mmol/l.

*Which of the following should she avoid in the diet?*

- 1- Cereal
- 2- Yoghurt
- 3- Broccoli
- 4- Carrots
- 5- Tomato

## Answer &amp; Comments

**Answer:** 5- Tomato

All meats, poultry and fish are high in potassium. Others are : Apricots (fresh more so than canned), Avocado, Banana, Cantaloupe, Honeydew , Kiwi, Lima beans, Milk, Oranges and orange juice, Potatoes, Prunes, Spinach, Tomatoes, Vegetable juice. Winter squash



[ Q: 461 ] MRCPass - Nephrology

A 27 year old man is admitted with pains radiating from his right loin to the groin. He also has haematuria. He gives a history of previous urinary tract infections. Clinical examination is unremarkable. Investigations are as follows:

Serum Sodium 139 mmol/L

Potassium 2.8 mmol/L

Urea 6.6 mmol/L

Creatinine 105 micromoles/L

Chloride 116 mmol/l

Bicarbonate 15 mol/L

*Which of the following would help treat the condition?*

- 1- Probenecid
- 2- Ciprofloxacin
- 3- Erythropoietin
- 4- Cyclophosphamide
- 5- Sodium bicarbonate

## Answer &amp; Comments

**Answer:** 5- Sodium bicarbonate

The patient presented with a history of renal colic and previous urinary tract infections and investigations reveal a normal anion gap acidosis. These features suggest a diagnosis of distal renal tubular acidosis. Sodium bicarbonate is effective in decreasing the acidosis.



[ Q: 462 ] MRCPass - Nephrology

A 25 year old has a family history of adult polycystic kidney disease.

*What is the best test to exclude polycystic kidney disease in this woman?*

- 1- Genetic linkage analysis
- 2- Renal ultrasound
- 3- Intravenous urogram
- 4- Urinalysis
- 5- Isotope renography

Answer & Comments

Answer: 2- Renal ultrasound

Ultrasonography with the criteria of more than 2 cysts in < 30 years age group is diagnostic of adult polycystic kidney disease. Genetic linkage analysis can be done as well (but less practical) to screen for PKD1 mutation on chromosome 16 and a PKD2 mutation on chromosome 4.



[ Q: 463 ] MRCPass - Nephrology

A 55 year old man who has been on haemodialysis for 20 years has progressive dementia.

*Which one of the following is most likely to have caused this?*

- 1- Urea disequilibrium
- 2- Small vessel ischaemia
- 3- Aluminium toxicity
- 4- Amyloidosis
- 5- Alzheimer's disease

Answer & Comments

Answer: 3- Aluminium toxicity

Aluminium has been implicated in 'dialysis dementia'. Dialysis dementia may be part of a multisystem disorder which includes vitamin D resistant osteomalacia, proximal myopathy, and non-iron deficient, microcytic, hypochromic anaemia. The use of aluminium free dialysate may arrest, or even improve, the established case. Desferrioxamine infusions (aluminium chelator) are the mainstay of treatment of dialysis dementia, improving up to 70% of patients, sometimes to normal.



[ Q: 464 ] MRCPass - Nephrology

A 50 year old woman has investigations for recurrent renal calculi.

A 24 hour urine collection revealed:

calcium 18 mmol/24 hours (2-7)

oxalate 180 mmol/24 hours (90-450)

uric acid 2.8 mmol/24 hours (1.5-4.4)

citrate 2 mmol/24hours (0.3-0.4)

*Which form of treatment is likely to be successful?*

- 1- Penicillamine
- 2- Thiazide diuretics
- 3- Insulin
- 4- Aluminium phosphate
- 5- Probenecid

Answer & Comments

Answer: 2- Thiazide diuretics

Hypercalciuria is the most common identifiable cause of calcium kidney stone disease. The other significant causes are hyperoxaluria, hyperuricosuria, low urinary volume, and hypocitraturia.

Hypercalciuria is defined as urinary excretion of more than 250 mg (6.2 mmol/24 h) or more

than 275-300 mg (7.5 mmol/24 h) of calcium per day for men while on a regular, unrestricted diet.

Thiazides currently are the mainstay of medical therapy for hypercalciuria. Orthophosphate therapy can also be used as a preventive treatment for kidney stones.



[ Q: 465 ] MRCPass - Nephrology

A 40 year old man presents with microscopic haematuria and hypertension. Ultrasound scan of his kidneys shows several cysts. He has a family history of a brain tumour (father) and an aunt had renal failure and deafness.

*Which of the following conditions is likely?*

- 1- Neurofibromatosis
- 2- Von Hippel Lindau
- 3- Alport's syndrome
- 4- Renal tubular acidosis type II
- 5- Scleroderma

Answer & Comments

Answer: 2- Von Hippel Lindau

von Hippel Lindau disease is transmitted as an autosomal dominant condition.

Affected individuals may have renal cysts, Clear cell renal cell carcinoma (CCRCC), retinal angiomas, central nervous system haemangioblastoma, pheochromocytoma.



[ Q: 466 ] MRCPass - Nephrology

A 60 year woman has bilateral swollen calves and ankles, with the left calf more painful and swollen. A 24 hr urine protein was 8g/day.

*Which could explain these findings?*

- 1- Factor VIII deficiency
- 2- Reduced concentration of Von Willebrand's factor

- 3- Reduced d dimer levels
- 4- Reduced antithrombin III activity
- 5- Reduced fibrinogen concentration

Answer & Comments

Answer: 4- Reduced antithrombin III activity

This patient has nephrotic syndrome, and also a probable left DVT. The most likely cause is nephrotic syndrome related reduced antithrombin III activity. Acquired AT-III deficiency causes include chronic liver disease, and protein loss due to ascites or nephrotic syndrome.



[ Q: 467 ] MRCPass - Nephrology

An 70 year old man was found on the floor of his hallway by his neighbour. On assessment in casualty, his GCS was 11/15, and he had a dense right hemiparesis.

His blood results are:

Na 145 mmol/l

K 6.2 mmol/l

Bic 22 mmol/l

Urea 20 umol/l

Creat 235 umol/l

Glu 7.5 mmol/l

Calcium (total) 1.72 mmol/l

Phosphate 1.6 mmol/l

Bili 12 umol/l

Alk phos 210 U/l

Albumin 35 g/l

WCC  $12 \times 10^9/L$

Hb 12.5 g/dl

PI  $350 \times 10^9/L$

Urine Blood +++ , protein negative

Urine microscopy - No WC, No RBCs. No organisms seen

*The most likely cause is:*

- 1- Amyloidosis
- 2- Porphyria cutanea tarda
- 3- Pyelonephritis
- 4- Rhabdomyolysis
- 5- Renal tubular acidosis type II

#### Answer & Comments

**Answer:** 4- Rhabdomyolysis

Raised CK (though not given) and renal failure makes rhabdomyolysis likely. Presence of urine myoglobin will cause a false positive urine dipstick to blood.



#### [ Q: 468 ] MRCPass - Nephrology

A 49 year old man with a history of heavy alcohol abuse and no other significant past medical problems was admitted for treatment of alcoholic hepatitis. He had no known history of liver or kidney disease until 1 month before admission, when jaundice developed.

Initially, he received treatment and follow-up as an outpatient but was then admitted for inpatient care when his mental status deteriorated. He had jaundice, tense ascites, severe leg edema, and mild to moderate encephalopathy.

His blood tests revealed: urea 32  $\mu\text{mol/l}$ , creatinine 480  $\mu\text{mol/l}$ , ALT 180 (5-35) U/l, AST 140 (1-31) U/l, ALP 360 (20-120) U/l, Bilirubin 45 (1-22)  $\mu\text{mol/l}$ , Albumin 30 (37-49) g/l. Urine sodium is 8 mmol/l.

*Which of the following should he be treated with?*

- 1- Normal saline infusion
- 2- Terlipressin
- 3- ACE inhibitor
- 4- Thiazide diuretics
- 5- Renal transplantation

#### Answer & Comments

**Answer:** 2- Terlipressin

The diagnosis is hepatorenal syndrome. Treatment that combines peripheral vasoconstricting medications or splanchnic vasoconstricting medications (e.g. midodrine), with a volume expander (eg, albumin) has shown a significant short-term efficacy. Promising results have been reported in studies and case reports with agonists of vasopressin V1 receptors, such as terlipressin, which predominantly act on the splanchnic circulation. Such treatment is designed to decrease the effects of intravascular hypovolemia.



#### [ Q: 469 ] MRCPass - Nephrology

A 60 year man has been on haemodialysis for 15 years due to diabetic nephropathy. He now has joint pains in the shoulders and knees. He has a past medical history of bilateral carpal tunnel decompression.

His bloods reveal: Hb 11 g/dl, ESR 50 mm/hr, urea 18  $\mu\text{mol/l}$ , creatinine 250  $\mu\text{mol/l}$ , sodium 142 mmol/l, potassium 4.4 mmol/l, Urate 0.6 ( $< 0.45$ ).

*What is the likely diagnosis?*

- 1- Gout
- 2- Polymyalgia rheumatica
- 3- Rheumatoid arthritis
- 4- Calcium pyrophosphate deposition
- 5- B2 microglobulin amyloidosis

#### Answer & Comments

**Answer:** 5- B2 microglobulin amyloidosis

The history of joint pains in a dialysis patient suggests amyloidosis.

Amyloid deposits composed of  $\beta_2$ -microglobulin is laid down in periarticular surfaces of joints and can develop

approximately 10 years after the start of dialysis.



[ Q: 470 ] MRCPass - Nephrology

A 35 year old lady with SLE presents with significant proteinuria and hypoalbuminaemia. A renal biopsy confirms diffuse proliferative glomeronephritis (WHO Class IV).

*Which of the following treatment regimes is recommended?*

- 1- Prednisolone alone
- 2- Azathioprine alone
- 3- Azathioprine & Methotrexate
- 4- Prednisolone & Methotrexate
- 5- Prednisolone & intravenous Cyclophosphamide

Answer & Comments

Answer: 5- Prednisolone & intravenous Cyclophosphamide

Diffuse proliferative glomerulonephritis is the commonest glomerulonephritis in SLE. There is mesangial and endothelial cell proliferation, polymorphonuclear cell infiltrate and granular subepithelial deposits of C3. It also carries the worst prognosis with progression towards renal failure.

The currently recommended therapy is pulse intravenous corticosteroids in combination with pulse cyclophosphamide continued for at least 12 months after remission. Newer regimes include combinations of prednisolone and mycophenolate.



[ Q: 471 ] MRCPass - Nephrology

A 22 year old woman has taken an overdose of multiple drugs.

*Haemodialysis is useful in the removal of which one of the following drugs?*

- 1- Digoxin

- 2- Amiodarone
- 3- Paraquat
- 4- Paracetamol
- 5- Salicylates

Answer & Comments

Answer: 5- Salicylates

Haemodialysis is useful for salicylates, NSAIDs, lithium, and in particular, Antifreeze poisoning. It is not useful for tricyclics, amiodarone and paraquat, paracetamol and digoxin, which is mostly tissue bound (use digoxin binding antibodies).



[ Q: 472 ] MRCPass - Nephrology

A 50 year diabetic patient is on the following medication:

Metformin 1g tds

Gliclazide 80 mg bd

Ramipril 5 mg daily

atenolol 50 mg

Her blood results show :

urea 13  $\mu\text{mol/l}$

creatinine 190  $\mu\text{mol/l}$

sodium 138 mmol/l

potassium 4.9 mmol/l

*Which of the following medications should be withdrawn?*

- 1- Gliclazide
- 2- Metformin
- 3- Atenolol
- 4- Ramipril
- 5- None of the above

Answer & Comments

Answer: 2- Metformin

The half life of metformin is prolonged in renal impairment. There is a risk of lactic acidosis.



Patients with a creatinine above 150  $\mu\text{mol/l}$  should have metformin discontinued.



[ Q: 473 ] MRCPass - Nephrology

A 60 year old man has chronic renal failure due to hypertension. His plasma creatinine reading is 300  $\mu\text{mol/L}$ , potassium level is 5.2 mmol/L, urea 17.0 mmol/L, phosphate 1.7 mmol/L, calcium 2.15 mmol/L, haemoglobin 10.0 g/dL. He has symptoms of lethargy and breathlessness on exertion.

*Which of the following treatments would be appropriate?*

- 1- Erythropoietin
- 2- ACE inhibitor
- 3- Alfacalcidol at 0.25 mcg per day
- 4- Haemodialysis
- 5- Phosphate restriction

Answer & Comments

Answer: 1- Erythropoietin

This patient would benefit from recombinant human EPO to correct his anaemia. Other causes of anaemia should be excluded first with haematinics.



[ Q: 474 ] MRCPass - Nephrology

A 60 year old lady with multiple medical problems is being considered for renal dialysis.

*Which one of the following is an absolute contraindication to choosing continuous ambulatory peritoneal dialysis?*

- 1- Colostomy
- 2- Polycystic kidneys
- 3- Heart failure
- 4- Previous ovarian surgery
- 5- Diabetes

Answer & Comments

Answer: 1- Colostomy

Recent or prospective abdominal surgery is a contraindication to CAPD.



[ Q: 475 ] MRCPass - Nephrology

A 60 year old man has type II diabetes and hypertension. He is feeling lethargic and is seen in the general medical clinic.

Investigations reveal:

Na 140 mmol/l,

K 5.5 mmol/l,

Urea 18 mmol/l,

Cr 220  $\mu\text{mol/l}$

Ultrasound of kidneys show : Left kidney 8.2 cm length, Right kidney 8.9 cm length.

*What is the likely cause of the renal failure?*

- 1- Acute tubular necrosis
- 2- Wegener's granulomatosis
- 3- Berger's disease
- 4- Cholesterol emboli
- 5- Renovascular disease

Answer & Comments

Answer: 5- Renovascular disease

The vascular risk factors and asymmetrical atrophic kidneys suggest renovascular disease. A magnetic resonance angiogram or digital subtraction angiography should be performed.



[ Q: 476 ] MRCPass - Nephrology

A 40 year old man has been unwell for several weeks with lethargy. His BP is 150/95 mmHg. Urinalysis shows no glucose, blood, ketones, nitrite but has protein +++.

A 24 hour urine collection shows protein of 4 g. His serum creatinine is 280 micromol/L,

urea is 27 mmol/L. His hepatitis B surface antigen is positive.

*Which of the following diseases is likely?*

- 1- Minimal change glomerulonephritis
- 2- Post streptococcal glomerulonephritis
- 3- Membranous glomerulonephritis
- 4- Acute nephritic syndrome
- 5- Diabetic nephropathy

#### Answer & Comments

Answer: 3- Membranous glomerulonephritis

Membranous nephropathy is caused by thickening of the capillary wall of the glomerular basement membrane (the deepest membrane) by immune complexes.

Causes of membranous glomerulonephritis are Hepatitis B, malaria, malignant tumors, non-Hodgkin's lymphoma, systemic lupus erythematosus, syphilis, gold, mercury, penicillamine.

The goal of treatment is to minimize symptoms and slow the progression of the disease. Often, corticosteroids or immunosuppressive medications may be used to reduce symptoms and progression of the disorder. Medications to treat symptoms may include antihypertensive and diuretic and cholesterol lowering agents.



#### [ Q: 477 ] MRCPass - Nephrology

A 65 year old lady has investigations for renal impairment (creatinine 220  $\mu\text{mol/l}$ ). She has a previous history of hypertension, peripheral vascular disease and osteoarthritis. She has been taking diclofenac for 6 years and penicillamine for the past 2 years (the drug was stopped 1 year ago).

Investigations show :

Urine : protein +, blood -ve

Ultrasound of kidneys : right 7.8 cm, left 8 cm in length.

*What is the likely diagnosis?*

- 1- Ischaemic nephropathy
- 2- Analgesic glomerulonephritis
- 3- Analgesic interstitial nephritis
- 4- Minimal change nephropathy
- 5- IgA nephropathy

#### Answer & Comments

Answer: 1- Ischaemic nephropathy

The likely diagnosis is renovascular disease due to the small kidney size.

There is only 1+ Proteinuria. The other clue is the history of hypertension. The normal length of kidneys is between 10-13 cm.



#### [ Q: 478 ] MRCPass - Nephrology

A 28 year old man was found to have acute renal failure.

*Which of the following is an indication for urgent dialysis in renal failure?*

- 1- Breathlessness
- 2- Potassium of 6.5 mmol/l
- 3- Glomerulonephritis
- 4- Haematuria
- 5- Pericardial effusion

#### Answer & Comments

Answer: 5- Pericardial effusion

Indications for dialysis are:

- uraemia pericarditis with effusion
- pulmonary oedema
- significant hyperkalaemia (>7) with evidence of ECG changes
- rapidly rising urea and creatinine



## [ Q: 479 ] MRCPass - Nephrology

A 45 year woman presents with ankle oedema. Her blood pressure was 120/70 mmHg.

Investigations show:

Creatinine 95  $\mu\text{mol/L}$ , Albumin 22  $\text{g/L}$ , Urinalysis shows blood - protein +++, Urinary protein excretion 8g /24hr.

*What is the best management step?*

- 1- ACE inhibitor
- 2- Frusemide
- 3- Insulin
- 4- Steroids
- 5- High protein diet

## Answer &amp; Comments

Answer: 4- Steroids

This patient has nephrotic syndrome as indicated by proteinuria, hypoalbuminuria, oedema (and hyperlipidaemia). High dose steroids should be the first line therapy e.g. prednisolone.



## [ Q: 480 ] MRCPass - Nephrology

A 42 year old man has presented with palpitations and dizziness. Upon investigation he has the following results:

sodium 132  $\text{mmol/l}$

potassium 7.6 $\text{mmol/l}$

urea 22  $\mu\text{mol/l}$

creatinine 360  $\mu\text{mol/l}$

*What should be the initial management?*

- 1- Frusemide
- 2- Haemodialysis
- 3- Sodium bicarbonate
- 4- Insulin and dextrose
- 5- Calcium gluconate

## Answer &amp; Comments

Answer: 5- Calcium gluconate

The important management step is to provide cardioprotection in the form of calcium gluconate. Following this the patient should have insulin and dextrose, as well as consideration for haemodialysis if the potassium does not improve.



## [ Q: 481 ] MRCPass - Nephrology

A 60 year old man has oliguria, peripheral oedema and breathlessness. He also gives a history of intermittent haemoptysis and dyspnoea over several months. There is no other significant past medical history.

On examination he is oedematous, cyanosed, tachypnoeic and there are widespread inspiratory crackles throughout the lung fields. Investigations are as follow s: Urine - Protein ++, Blood ++, Immunology: Anti glomerular basement membrane antibody positive,

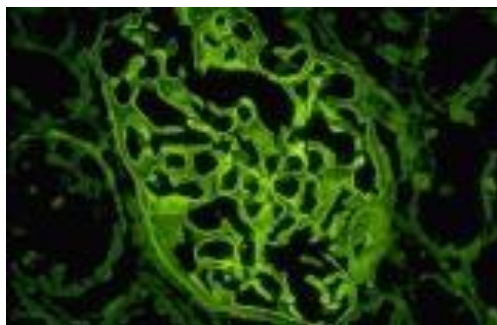
*The renal biopsy is likely to show :*

- 1- Minimal change glomerulonephritis
- 2- Membranoproliferative glomerulonephritis
- 3- Focal segmental glomerulosclerosis
- 4- Crescentic glomerulonephritis
- 5- Membranous glomerulonephritis

## Answer &amp; Comments

Answer: 4- Crescentic glomerulonephritis

The diagnosis is Goodpasture's syndrome. Initially there is a focal proliferative glomerulonephritis and it later develops into a proliferative crescentic glomerulonephritis. The proliferative changes are frequently associated with epithelial crescent formation and necrosis.



This immunofluorescence pattern shows positivity with antibody to IgG. There is a smooth, diffuse, linear pattern that is characteristic for deposition of glomerular basement membrane antibody with Goodpasture syndrome.



[ Q: 482 ] MRCPass - Nephrology

A 55 year man has nephrotic syndrome diagnosed recently. His investigations show an albumin of 20 g/L, Total cholesterol of 9 mmol/l, 24 hour urine reveals 4.5g protein excretion. A renal biopsy shows focal segmental glomerulosclerosis.

*Which one of following is most likely to preserve renal function?*

- 1- Bendrofluazide
- 2- Salt restriction
- 3- Lisinopril
- 4- Atorvastatin
- 5- Aspirin

Answer & Comments

Answer: 3- Lisinopril

In Focal Segmental Glomerulosclerosis (FSGS), ACE inhibitors usually reduce proteinuria and lipemia, and may slow the progression towards renal disease.



[ Q: 483 ] MRCPass - Nephrology

A 32 year old woman has loin pains and haematuria. She has a family history of polycystic kidney disease.

*Which one of the following tests should be performed?*

- 1- Intravenous urogram
- 2- Renal ultrasound
- 3- Genetic testing
- 4- Isotope renography
- 5- Urine dipstick

Answer & Comments

Answer: 2- Renal ultrasound

Renal ultrasound is the simplest test. Genetic testing can also be done (PKD1 on chromosome 16, PKD2 on chromosome 4).



[ Q: 484 ] MRCPass - Nephrology

A 50 year old man has end stage renal failure due to diabetes. He receives 4 hours of haemodialysis, 3x weekly.

His pressure is 180/105 mmHg predialysis and 160/90 mmHg postdialysis. Predialysis bloods show:

Hb 10 g/dL  
sodium 132 mmol/l  
potassium 6.5 mmol/L  
urea 45 mmol/l  
creatinine 1125 umol/L  
calcium (corrected) 2.15 mmol/L  
phosphate 1.2 mmol/l

*What is the best management step?*

- 1- Aluminium phosphate binders
- 2- 1-alfacalcidol supplements
- 3- Increase length of haemodialysis
- 4- Erythropoietin supplements
- 5- Calcium gluconate iv

Answer & Comments

Answer: 3- Increase length of haemodialysis

The high urea and creatinine, as well as hypertension suggests there is more room for dialysis. Although EPO or vit D supplements are probably beneficial, longer dialysis sessions would help clear the fluid overload and reno-toxins.



[ Q: 485 ] MRCPass - Nephrology

A 40 year old patient with renal calculi has further investigation.

*High urinary levels of the following substances predispose to urinary tract stone formation, EXCEPT FOR:*

- 1- Cystine
- 2- Citrate
- 3- Calcium
- 4- Urate
- 5- Oxalate

Answer & Comments

Answer: 2- Citrate

Calcium, oxalate, cystine and urate are all stone-forming substances, so high urinary levels promote stone formation. Low urinary citrate levels promote stone formation.



[ Q: 486 ] MRCPass - Nephrology

A 30-year-old woman presented with a history of nephrotic syndrome diagnosed when she was 4 years old.

There was no family history of renal disease. An initial renal biopsy performed showed minimal-change disease.

She was treated with steroids and was determined to be steroid-dependent. Subsequent trials of cyclosporine and cyclophosphamide failed to improve her condition and she was referred for additional evaluation.

She has a second renal biopsy. Light microscopic examination showed a patchy but

striking vacuolar change in the renal tubular cells, with large nodular aggregates of foamy cells. Intracellular accumulation of several glycosphingolipids was suspected.

*Which one of the following is likely?*

- 1- Tuberculosis
- 2- Diabetic nephropathy
- 3- Anderson Fabry disease
- 4- Glycogen storage disease
- 5- Fibromuscular dysplasia

Answer & Comments

Answer: 3- Anderson Fabry disease

Inheritance of Anderson Fabry disease is usually X linked recessive. A rare, inherited metabolic disease in which a glycolipid, ceramide trihexoside, accumulates in blood vessels, as well as in numerous tissues and organs. The excessive amounts present in the kidneys and other organs impairs their function. It is due to the absence of alpha galactosidase A.

Patients present with the skin lesions (angiokeratoma corporis diffusum), small red spots seen on the lower abdomen, thighs and scrotum, corneal opacities, episodes of fever, primary paresthesia of the extremities and peripheral oedema and renal failure. It is prevalent in males, who present with full-blown syndrome. Females are more likely to present with a partial form.



Angiokeratoma corporis diffusum



## [ Q: 487 ] MRCPass - Nephrology

A 50 year old woman has ankle oedema.

Urine dipstick analysis shows +++ Protein.

Blood tests show:

creatinine 90 micromol/l

urea 8 mmol/l

albumin 20g/l

A renal biopsy shows foot process fusion on the electron microscopy.

*Which of the following agents should be started?*

- 1- Infliximab
- 2- Prednisolone
- 3- Clopidogrel
- 4- Azathioprine
- 5- Ciclosporin

## Answer &amp; Comments

Answer: 2- Prednisolone

The diagnosis is minimal change glomerulonephritis. Initial therapy is with prednisolone rather than Azathioprine. Retraction of the epithelial foot processes is observed consistently in patients with MCD. This is, at times, described as foot-process fusion and results from disordered epithelial cell structure with withdrawal of the dendritic process. This leads to the loss of the normal charge barrier such that albumin selectively leaks out and proteinuria ensues.



## [ Q: 488 ] MRCPass - Nephrology

A 51 year old man was on dialysis for renal failure. He was on erythropoietin. Investigations show:

Hb 8 g/dl

Parathyroid hormone 15 (0.8-8) pmol/l

Ferritin concentration : decreased in three months from upper limit of normal to lower limit of normal

*What is the cause for the anemia?*

- 1- Inadequate erythropoietin
- 2- Osteitis fibrosa cystica
- 3- Inadequate dialysis
- 4- Iron deficiency
- 5- Hyperparathyroidism

## Answer &amp; Comments

Answer: 4- Iron deficiency

There are many causes of decreased responsiveness to erythropoietin in patients with chronic renal failure. The most common is insufficient iron to meet the demands of increased erythrocyte production. Other factors that can attenuate the response include aluminum toxicity, infection, inflammation, and folic acid deficiency.



## [ Q: 489 ] MRCPass - Nephrology

A 18 year old male is admitted with a history of haematuria and facial swelling. Since two weeks ago he complained of a sore throat which was very bad and persistent. On examination there is facial and ankle oedema.

His blood pressure is marginally elevated at 150/90. Investigations show haematuria and red cell casts. Blood urea is elevated. C3 and C4 levels are reduced. Abdominal ultrasound shows normal sized kidneys.

*What is the diagnosis?*

- 1- Ig A nephropathy
- 2- Mesangiocapillary glomerulonephritis
- 3- Post streptococcal acute nephritic syndrome
- 4- Renal artery stenosis
- 5- Focal segmental glomerulonephritis



## Answer &amp; Comments

**Answer:** 3- Post streptococcal acute nephritic syndrome

In post streptococcal acute nephritic syndrome,

pontaneous improvement usually occurs and the aim of treatment is to prevent complications such as pulmonary oedema, uraemia or hypertensive encephalopathy whilst awaiting spontaneous improvement in renal function.

Penicillin may help active bacterial infection of the throat.



## [ Q: 490 ] MRCPass - Nephrology

An 60 year old woman was brought to the emergency department with hypertension and abdominal pain.

Physical examination and initial laboratory work-up were unremarkable; except for severe abdominal tenderness and elevated lactate dehydrogenase.

A CT scan showed a hypodense, triangle-shaped area in the right kidney suggestive of renal infarction. Renal duplex scanning revealed a focal increase of flow velocities followed by turbulence in multiple segments of the right renal artery. Arteriography showed multiple lesions in a "string of beads" pattern and a parenchymal filling defect.

**What is the diagnosis?**

- 1- Polyarteritis nodosa
- 2- Wegener's granulomatosis
- 3- Sarcoidosis
- 4- Adult polycystic kidney disease
- 5- Fibromuscular Dysplasia

## Answer &amp; Comments

**Answer:** 5- Fibromuscular Dysplasia

Fibromuscular Dysplasia is an uncommon vascular disease, which results in arterial dilation and narrowing of vessel segments. Definitive diagnosis can be made by selective renal arteriographs and bilateral renal vein and systemic venous renin measurements.

Fibromuscular dysplasia (FMD), is a developmental lesion of unknown etiology which can affect multiple vessels. It consists of areas of heaped up intima, media, and adventitia alternating with areas of medial destruction, the latter resulting in small focal aneurysms. The disorder can be progressive and affects females greater than males in a ratio of 3:1. It more commonly affects middle aged patients.

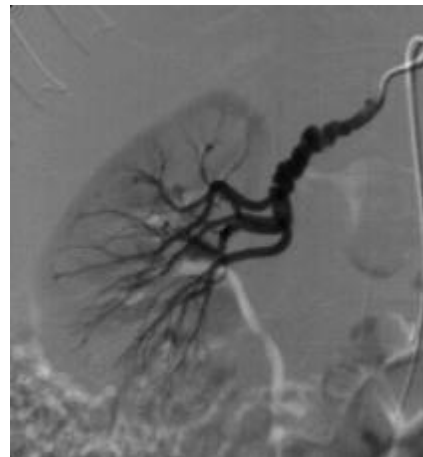


Image shows a diffusely beaded appearance of the right main renal artery to the level of the branch vessels.



## [ Q: 491 ] MRCPass - Nephrology

A 35 year old woman with a 25-year history of diabetes treated with insulin is found to have 1g proteinuria per 24 hour and a creatinine 200 µmol/l. He has significant peripheral oedema. Blood pressure is 145/85 mm Hg.

HbA1C is 8%.

**In order to preserve renal function, which of the following is the most important step?**

- 1- Commence frusemide
- 2- Strict restriction of dietary phosphate

- 3- Strict diabetic control aiming for HbA1c < 7%
- 4- Commence a beta blocker
- 5- Commence an ACE inhibitor

#### Answer & Comments

**Answer:** 5- Commence an ACE inhibitor

There is clear evidence that ACE inhibition (enalapril, captopril used in trials) in diabetics delays progression of renal failure even if they are normotensive.



#### [ Q: 492 ] MRCPass - Nephrology

A 19-year-old male is unwell. He has previously had a history of renal transplantation 5 years ago. Within three days of admission he developed acute renal failure with evidence of haemolytic anaemia and thrombocytopenia.

A clinical diagnosis of haemolytic uraemic syndrome was made and he was treated with plasma exchange.

*Which one of the following drugs could have caused this?*

- 1- Ciclosporin
- 2- Trimethoprim
- 3- Prednisolone
- 4- Amoxycillin
- 5- Intravenous immunoglobulin

#### Answer & Comments

**Answer:** 1- Ciclosporin

Ciclosporin can cause HUS in renal transplant recipients, especially in those also receiving rapamycin, which increases tissue concentrations of ciclosporin.



#### [ Q: 493 ] MRCPass - Nephrology

A 30 year old African woman

presents with seizures, hypertension, a malar rash.

Bloods show:

Hb 11 g/dl, WCC  $8 \times 10^9/L$ , platelets  $180 \times 10^9/L$ , urea 22  $\mu\text{mol/l}$ , creatinine 290  $\mu\text{mol/l}$ , sodium 140 mmol/l, potassium 5 mmol/l, ESR 100 mm/hr, CRP 25 mg/l.

*What is the most likely diagnosis?*

- 1- Anti GBM disease
- 2- Multiple myeloma
- 3- SLE
- 4- Wegener's granulomatosis
- 5- Sickle cell disease

#### Answer & Comments

**Answer:** 3- SLE

With the history of renal impairment, raised ESR, malar flush, SLE is the most likely diagnosis.



#### [ Q: 494 ] MRCPass - Nephrology

A 45 year old diabetic gentleman had a renal biopsy during investigation of worsening renal failure.

*Which of the following is typical of diabetic nephropathy?*

- 1- Hyaline thrombus formation
- 2- Mesangial hypercellularity
- 3- Congo red staining causing green birefringence
- 4- Basement membrane spikes
- 5- Basement membrane thickening and mesangial widening

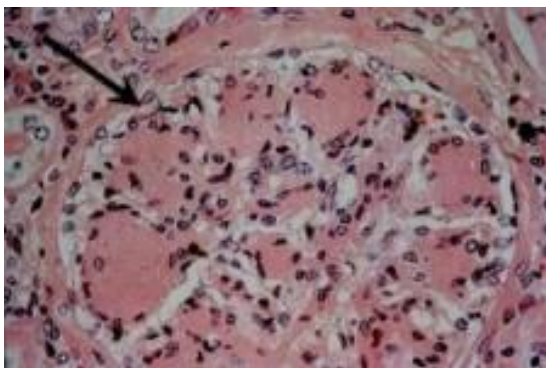
#### Answer & Comments

**Answer:** 5- Basement membrane thickening and mesangial widening

The earliest morphologic abnormality in diabetic nephropathy is the thickening of the

glomerular basement membrane (GBM) and expansion of the mesangium due to accumulation of extracellular matrix. Light microscopy findings show an increase in the solid spaces of the tuft, material (diffuse diabetic glomerulopathy).

Large acellular accumulations also may be observed within these areas. These are circular on section and are known as the Kimmelstiel-Wilson lesions/nodules. Immunofluorescence microscopy may reveal deposition of immunoglobulin G along the GBM in a linear pattern, but this is not diagnostic. In advanced disease, the mesangial regions occupy a large proportion of the tuft, with prominent matrix content. Further, the basement membrane in the capillary walls (ie, the peripheral basement membrane) is thicker than normal.



Diabetic glomerulopathy of Kimmelstiel-Wilson disease



[ Q: 495 ] MRCPass - Nephrology

A 40 year old woman presents with swollen ankles. Her urine dipstick reveals protein +++, but no other abnormality. She has gout and diabetes. Plasma creatinine is 120 micromoles/l and albumin 28g/l.

*Which of the following medications would be most likely to account the swollen ankles and proteinuria?*

- 1- Lisinopril
- 2- Bendroflumazide
- 3- Prednisolone

- 4- Ibuprofen
- 5- Allopurinol

#### Answer & Comments

Answer: 4- Ibuprofen

Non-steroidal anti-inflammatory drugs can cause nephrotic syndrome and interstitial nephritis.



[ Q: 496 ] MRCPass - Nephrology

A 45 year old woman presents with high fever, purpura occurring on her arms and legs, haematuria and renal dysfunction.

Investigation results were:

sodium 135 mmol/l  
potassium 4.5 mmol/l  
urea 5 mmol/l  
creatinine 100 µmol/l

A p-ANCA is positive

Renal biopsy before steroid therapy confirmed the diagnosis of pauci-immune-type crescentic glomerulonephritis.

*What is the diagnosis?*

- 1- Post streptococcal glomerulonephritis
- 2- Microscopic polyangitis
- 3- Temporal arteritis
- 4- Takayasu's arteritis
- 5- Behcet's disease

#### Answer & Comments

Answer: 2- Microscopic polyangitis

P-ANCA (perinuclear staining) is usually due to myeloperoxidase, and is found in :

microscopic polyarteritis (80%)  
idiopathic crescentic GN(65%)  
Churg-Strauss Syndrome  
polyarteritis nodosa

Wegener's granulomatosis

SLE

Although p ANCA can be positive in many conditions, c ANCA is found more commonly in Wegener's Granulomatosis.

Treatment of the condition is with high dose steroids.



[ Q: 497 ] MRCPass - Nephrology

A 40 year old man has a potassium of 7.5 mmol/l and requires treatment. ECG shows widened QRS complexes.

*Which one of the following agents is cardioprotective but does not lower potassium?*

- 1- NSAIDs
- 2- Salbutamol
- 3- ACE inhibitors
- 4- Calcium gluconate
- 5- Insulin and dextrose

#### Answer & Comments

**Answer:** 4- Calcium gluconate

Calcium gluconate is cardioprotective but does not lower potassium. ECG changes of hyperkalaemia in progression of severity are tented T waves, decreased p wave amplitude, widened QRS complex, sinusoidal waves and asystole.



[ Q: 498 ] MRCPass - Nephrology

A 50 year old man who presents with dizziness has broad complexes on the ECG. His blood gas reveals that his potassium is 8 mmol/l.

*Which of the following is the best medical therapy?*

- 1- Rectal calcium resonium
- 2- Iv calcium gluconate 10mls 10%

3- Iv dextrose (50% 50mls) insulin 15 units

4- Nebulised salbutamol

5- Iv sodium bicarbonate

#### Answer & Comments

**Answer:** 2- Iv calcium gluconate 10mls 10%

The first line therapy for cardioprotection is calcium gluconate.

Following this, insulin and dextrose should be given.



[ Q: 499 ] MRCPass - Nephrology

A 42 year old man has generalised oedema. Urine dipstick shows protein +++, blood -ve.

*Which one of the following findings is suggestive of amyloidosis?*

- 1- Abnormal liver function tests
- 2- Cryoglobulinaemia
- 3- Benign monoclonal gammopathy without myeloma
- 4- Large numbers of granular casts, fat bodies and red cells in the urine
- 5- Selective proteinuria

#### Answer & Comments

**Answer:** 3- Benign monoclonal gammopathy without myeloma

Light chains in the urine suggest deposition causing amyloidosis (may be either myeloma or benign monoclonal gammopathy).

Deposits occur in the tongue, nerves or heart. Cryoglobulinaemia is suggestive of lymphoma or myeloma. Granular casts, red cell casts and selective proteinuria suggest glomerulonephritis.



[ Q: 500 ] MRCPass - Nephrology

A 35 year old man has renal colic.

Ultrasound of the abdomen confirms renal calculi. Urinalysis showed typical hexagonal or benzene crystals.

*What is the diagnosis?*

- 1- Calcium oxalate stones
- 2- Cystinuria
- 3- Primary oxaluria
- 4- Calcium carbonate stones
- 5- Adult polycystic kidney disease

#### Answer & Comments

Answer: 2- Cystinuria

Cystinuria is a disorder of proximal tubular cells. Amino aciduria (COAL - cystine, ornithine, arginine, lysine) - causes cystine stones (accounts for 1% of all stones). Urinalysis may show typical hexagonal or benzene crystals, which are essentially pathognomonic of cystinuria. Cystine stones are pale yellow.

Renal calculi from a patient with cystinuria who had nephrectomy. First-line therapy in most cases is a conservative approach, including large-volume fluid intake, regular urine pH monitoring (urine pH level of 7.5 and <8), dietary restrictions, and urinary alkalization with potassium citrate.



#### [ Q: 501 ] MRCPass - Nephrology

A 45 year woman has a renal transplantation. She has a history of diabetes. 4 months after transplantation she presents acute pain in region of transplanted kidney.

Urinalysis shows nitrites +, protein +, no blood or leucocytes.

*Which one of following is the likely diagnosis?*

- 1- Nephrolithiasis
- 2- Pyelonephritis
- 3- Graft rejection
- 4- Diabetic nephropathy
- 5- Native polycystic kidneys

#### Answer & Comments

Answer: 2- Pyelonephritis

The patient has immunosuppression following transplantation. Graft rejection is possible, but the history would be most consistent with a pyelonephritis because of positive nitrites and loin pain.



#### [ Q: 502 ] MRCPass - Nephrology

A 50 year old woman has a corrected calcium of 2.90 mmol/l and phosphate 0.7 mmol/l, parathyroid hormone (PTH) level is 10.0 pmol/l (1.1 to 6.8), and the 24-hour urinary calcium excretion is 0.8 mmol/l.

Plasma creatinine is 120 micromol/l and alkaline phosphatase 130U/l. There is a family history of hypercalcaemia.

*Which of the following is likely?*

- 1- The diagnosis is likely to be primary hyperparathyroidism
- 2- Treatment with oral phosphate supplements should suppress her PTH level
- 3- She should be screened for a mutation in the multiple endocrine neoplasia - 1 gene.
- 4- She has an abnormality in the calcium-sensing receptor
- 5- Parathyroid surgery will be necessary in the future



## Answer &amp; Comments

**Answer:** 4- She has an abnormality in the calcium-sensing receptor

The patient has an inappropriately high level of PTH, but the reduced urine calcium excretion suggests that she has familial hypocalcemic hypercalcaemia (FHH) due to a mutation in the calcium receptor. Familial hypocalcemic hypercalcaemia (FHH) or familial benign hypercalcaemia is an autosomal dominant inherited disorder of calcium metabolism. It is characterized by lifelong asymptomatic hypercalcaemia associated with a relative hypocalciuria and a tendency to hypermagnesaemia. The biochemical features of this disorder are difficult to distinguish from mild primary hyperparathyroidism. Several patients have had parathyroidectomy for hyperparathyroidism with no effect on calcium levels.



## [ Q: 503 ] MRCPass - Nephrology

A 60 year old man has a history of hypertension. His blood show : urea 20  $\mu\text{mol/l}$  & creatinine 320  $\mu\text{mol/l}$ .

Urinalysis showed blood ++ protein ++. Renal ultrasound showed left kidney : 9 cm long, right be 8.5 cm long and no evidence of hydronephrosis.

**What is the next best investigation?**

- 1- Renal biopsy
- 2- DMSA renography
- 3- Intravenous urography
- 4- Magnetic resonance angiography
- 5- Retrograde pyelography

## Answer &amp; Comments

**Answer:** 1- Renal biopsy

There is proteinuria and haematuria. Renal impairment is likely to be related to glomerular pathology rather than renal artery

stenosis or outflow obstruction, hence a renal biopsy is the best way to confirm a diagnosis.



## [ Q: 504 ] MRCPass - Nephrology

A 45 year old woman presents with acute pain that radiates from his left loin to his left groin. The pain comes for a few seconds, and then goes. It is sharp in nature. A plain abdominal X Ray is unremarkable. Ultrasound examination demonstrates pelvicalyceal dilatation and the presence of several masses.

**The most likely diagnosis is:**

- 1- Papillary necrosis
- 2- Recurrent UTIs
- 3- Cystine renal stones
- 4- Uric acid renal stones
- 5- Renal cell carcinoma

## Answer &amp; Comments

**Answer:** 4- Uric acid renal stones

Urinary stones made of calcium oxalate or of cystine are radio-opaque and would be visible on a plain X-ray. In contrast, uric acid stones are radiolucent, hence most likely in this case.



## [ Q: 505 ] MRCPass - Nephrology

A 23-year-old man presents with a rash on his legs. He had a chest infection last week, and now has symptoms of joint pains. Stick testing of his urine reveals proteinuria + and haematuria +++.

**What is the most likely diagnosis?**

- 1- IgA nephropathy
- 2- Mixed essential cryoglobulinaemia
- 3- Membranous glomerulonephritis
- 4- Acute nephritic syndrome
- 5- Henoch Schönlein purpura



## Answer &amp; Comments

**Answer:** 5- Henoch Schönlein purpura

Henoch-Schönlein purpura is a disease that has the symptoms of purple spots on the skin, joint pain, gastrointestinal symptoms, and glomerulonephritis. The exact cause for this disorder is unknown. The syndrome is usually seen in children, but people of any age may be affected. It is more common in boys than in girls.

Many people with Henoch-Schönlein purpura had an upper respiratory illness in the previous weeks. In this case, if a rash were not present, then IgA nephropathy would be the most probable cause of his urinary findings.

Mixed essential cryoglobulinaemia will often present with palpable purpura on the legs and nephritis, but is an uncommon disease of older patients.



## [ Q: 506 ] MRCPass - Nephrology

A 60 year old man presents with pain in the lower back. The pain begins in the lower back and radiating to the lower abdomen. He has not been on any medications recently. Investigations reveal a normocytic normochromic anaemia, raised erythrocyte sedimentation rate and C-reactive protein. Renal function is impaired. Ultrasound scan shows bilateral hydronephrosis.

*Which of the following investigations should be done?*

- 1- CT abdomen
- 2- 24 hour urine for creatinine clearance
- 3- 24 hour urine protein
- 4- Intravenous urogram
- 5- MAG 3 scan

## Answer &amp; Comments

**Answer:** 1- CT abdomen

The diagnosis is idiopathic retroperitoneal fibrosis. CT scanning will show a peri-aortic fibrotic, which can be confirmed by CT guided biopsy.



## [ Q: 507 ] MRCPass - Nephrology

A 20-year-old man presented to a clinic with a two-day history of pain in his knees and shoulders. The pain had become severe enough that he was unable to walk. The patient also noted a low-grade fever and a purplish rash on his shins and feet on the morning of admission.

Examination of the extremities revealed bilaterally tender, swollen wrists, knees and ankles without effusion or erythema. The patient had diffuse tenderness in several muscle groups, including the quadriceps, latissimus dorsi and trapezius. Skin examination revealed a palpable purpuric rash on both ankles that tapered up to the knees.

Investigations showed renal impairment and also haematuria.

*Which one of the following is most likely?*

- 1- Henoch Schönlein purpura
- 2- Infective endocarditis
- 3- Cyclosporin toxicity
- 4- Rhabdomyolysis
- 5- Diabetic glomerulosclerosis

## Answer &amp; Comments

**Answer:** 1- Henoch Schönlein purpura

Henoch Schönlein purpura (HSP) causes a rash around the trunk and polyarthritis. It is associated with renal failure caused by a glomerulonephritis which is similar to IgA glomerulonephritis causing macroscopic haematuria.

Apart from a rash, arthralgia and arthritis are the most common manifestations of Henoch-Schönlein purpura, occurring in 80 to 90 percent of cases. Joint involvement is usually

oligoarticular and primarily affects the large joints of the shoulders, knees, wrists and elbows. The image below shows the rash of HSP.



[ Q: 508 ] MRCPass - Nephrology

An 25 year old man is referred to the outpatient clinic following the finding that he of microscopic haematuria and proteinuria on the urine dipstick. He also has bilateral sensorineural deafness. His sister also has deafness.

*What is the likely diagnosis?*

- 1- Liddle's syndrome
- 2- Bartter's syndrome
- 3- Alport's syndrome
- 4- Von Hippel Lindau syndrome
- 5- Holt Oram syndrome

Answer & Comments

Answer: 3- Alport's syndrome

Inheritance can be X-linked dominant, autosomal dominant and, rarely, autosomal recessive in Alport's syndrome. It is a hereditary disease of basement membranes which is characterised by sensorineural deafness and renal failure.

Patient's with Alport's syndrome often present with haematuria and proteinuria. Rarely cataracts also occur.

Management include monitoring of renal function (until the need for dialysis) and management of hypertension.



[ Q: 509 ] MRCPass - Nephrology

A 50 year old lady has a diagnosis of scleroderma. She is admitted with dizziness. On examination, her pressure is 220/110 and there is bilateral papilloedema. Blood tests reveal a creatinine of 180 micromol/l.

*What is the best medication for treatment?*

- 1- Amlodipine
- 2- Sodium nitroprusside
- 3- Lisinopril
- 4- Propafenone
- 5- Labetalol

Answer & Comments

Answer: 3- Lisinopril

The term "scleroderma renal crisis" has been used to characterize kidney involvement in scleroderma, because of the abrupt and potentially devastating consequences of kidney disease.

When any persistent rise in blood pressure is detected, or if there is the appearance of proteinuria, treatment should promptly be instituted with angiotensin converting enzyme (ACE) inhibitors (enalapril, lisinopril etc).

Angiotensin--converting enzyme (ACE) inhibition has significantly improved survival in such patients.



[ Q: 510 ] MRCPass - Nephrology

A 65 year old man was found on the floor in a flat and brought into hospital by ambulance. He has a temperature of 35°C, and a blood pressure of 110/70 mmHg. Dipstick urine analysis shows : blood +++.

Blood test show :

Creatinine, 280 micromol/L, LDH 900 U/L.

*What likely cause of renal failure?*

- 1- Diabetes
- 2- Acute tubular necrosis
- 3- Rhabdomyolysis
- 4- Vasculitis
- 5- Hypertension

#### Answer & Comments

Answer: 3- Rhabdomyolysis

A patient who has been on the floor some time may have muscle injury and consequent rhabdomyolysis. There would be urine myoglobin and a CK measurement may be in the thousands.



#### [ Q: 511 ] MRCPass - Nephrology

A 75 year old gentleman referred for back and leg pains. He was unable to mobilise unaided and complains of urinary incontinence. He has had a TURP in the past for benign prostatic hypertrophy.

On examination, he has 3/5 power in his left leg and 2/5 in his right, His plantars are upgoing. Rectal examination reveals an enlarged, irregular prostate and lax anal tone. There is sensory deficit over both the lower limbs upto the suprapubic level.

There is a palpable bladder.

Investigations show :

Na 138 mmol/l

K 4.5 mmol/l

Urea 4.8 mmol/l

Creatinine 100 mmol/l

Glucose 13 mmol/l

PSA 910

He is commenced on high dose steroids. However, he appears to be deteriorating neurologically.

*What is the definitive treatment?*

- 1- Orchidectomy
- 2- Further high dose dexamethasone
- 3- Stilboestrol and aspirin
- 4- Goserelin
- 5- Bicalutamide

#### Answer & Comments

Answer: 1- Orchidectomy

This man presents with spinal cord compression, which is potentially reversible. Out of the options, orchidectomy is the correct treatment, as this will eliminate all androgens immediately, which is the cause of the tumour growth. Bicalutamide, which is an androgen receptor antagonist, is slow acting and will not have an early effect. Goserelin is contraindicated in patients with acute spinal cord compression, as it will cause "tumour flare" and may worsen. It is usually prescribed 5-7 days post bicalutamide loading in order to avoid the flare.



#### [ Q: 512 ] MRCPass - Nephrology

A 30 year old man has blood pressure of 200/90. His serum potassium is 2.8 mmol/l, creatinine is 90 µmol/l. Urine dipstick shows protein trace.

*Which of the following diagnosis is likely?*

- 1- Conn's syndrome
- 2- Pheochromocytoma
- 3- Diabetic nephropathy
- 4- Hypertensive nephropathy
- 5- Renal artery stenosis

#### Answer & Comments

Answer: 1- Conn's syndrome

High levels of aldosterone in Conn's (primary aldosteronism) can also cause sodium retention, potassium loss and hypertension.



## [ Q: 513 ] MRCPass - Nephrology

A 15 year old girl has nephrotic syndrome due to minimal change glomerulonephritis.

*What is the likely long term outcome?*

- 1- Long term remission
- 2- Recurrent relapses
- 3- Chronic renal impairment
- 4- Persistent proteinuria
- 5- Persistent hypercholesterolaemia but not proteinuria

## Answer &amp; Comments

Answer: 1- Long term remission

Minimal change disease usually responds well to medical treatment, with response to corticosteroids usually within the first month. 90% of patients with minimal change disease in the younger age group achieve remission after 8 weeks of steroids.



## [ Q: 514 ] MRCPass - Nephrology

A 45 year old man had recurrent flank pains and was found to have renal calculi on the ultrasound scan. His serum calcium measurements were normal. A 24 hour urine analysis revealed:

calcium 12.2 mmol/24 hours (2.5 - 7.5)

oxalate 320 mmol/24 hours (90 - 450)

uric acid 3 mmol/24 hours (1.5 - 4.5)

citrate 2.1 mmol/24hours(0.3-3.5)

*What is the recommended therapy to reduce stone formation?*

- 1- Prednisolone
- 2- Calcium restriction
- 3- Penicillamine
- 4- Increase alcohol consumption
- 5- Bendrofluazide

## Answer &amp; Comments

Answer: 2- Calcium restriction

The patient has hypercalciuria causing calculi formation. The first step should be to reduce calcium intake. The second could be to use thiazide diuretics.



## [ Q: 515 ] MRCPass - Nephrology

A haemodialysis patient with hypertensive nephropathy, has the following blood results: calcium 2.85 (2.25-2.7) mmol/l, phosphate 2.3 (0.8-8)mmol/l. PTH is 1.2 (0.8-8 pmol/l). The patient's medication includes alfacalcidol each day and calcium acetate as a phosphate binder before each meal.

*Which of the following should be recommended?*

- 1- The patient should have a low calcium diet
- 2- Increased frequency of haemodialysis
- 3- Dialysate calcium should be lowered
- 4- Phosphate restriction in the diet
- 5- Calcium acetate dose should be reduced

## Answer &amp; Comments

Answer: 4- Phosphate restriction in the diet

Lowering the phosphate (rather than the calcium) is the most important measure, as the elevated phosphate stimulates parathyroid proliferation and PTH secretion. This is best done by reinforcing dietary restriction and ensuring that the patient is receiving adequate dialysis. The vitamin D analogue will be increasing absorption of calcium and phosphate so this should be reduced or stopped.



## [ Q: 516 ] MRCPass - Nephrology

*In a patient with renal failure, use of which of the following medications would suggest a possible diagnosis of retroperitoneal fibrosis?*

- 1- Bendrofluazide
- 2- Methysergide
- 3- Diltiazem
- 4- Aspirin
- 5- Clopidogrel

#### Answer & Comments

Answer: 2- Methysergide

Drugs associated with retroperitoneal fibrosis include:

methysergide  
beta-adrenergic blockers  
lysergic acid diethylamide  
methyldopa  
amphetamines  
phenacetin  
pergolide  
cocaine



#### [ Q: 517 ] MRCPass - Nephrology

A 36 year old male patient was admitted with abdominal pain, diarrhea, nausea, vomiting and fever which had started one week before.

The patient had been followed up with predialysis Chronic Renal Failure(CRF) diagnosis for 4 years and has been receiving continuous ambulatory peritoneal dialysis (CAPD) treatment for 4 months.

In the peritoneal fluid, 1600/ mm<sup>3</sup> cells were detected and 70% of them were polymorphonuclear leukocytosis.

*What should the patient be treated with?*

- 1- Amoxicillin
- 2- Vancomycin
- 3- Ciprofloxacin
- 4- Trimethoprim

- 5- Metronidazole

#### Answer & Comments

Answer: 2- Vancomycin

Peritonitis is characterized by abdominal pain and cloudy bags with greater than 100 WBC per ml of fluid. Typically when more than one organism is present, the diagnosis becomes more likely. Treatment is usually with a first generation cephalosporin, along with gentamicin (then adjusted according to culture sensitivities) or vancomycin with tobramycin.



#### [ Q: 518 ] MRCPass - Nephrology

A 45 year old man presents to the hospital with severe lethargy. Initial investigations identify a significant anaemia with fragmentation on the blood film and low platelets. Clotting screen is normal. His U+Es show a creatinine of 260 umol/l. BP was recorded at 180/100.

*What is the most likely diagnosis?*

- 1- Thrombotic thrombocytopenic purpura (TTP)
- 2- Disseminated intravascular coagulation
- 3- Haemolytic uraemic syndrome
- 4- Hypertensive nephropathy
- 5- Polyarteritis nodosa

#### Answer & Comments

Answer: 3- Haemolytic uraemic syndrome

HUS is a disorder characterised by thrombocytopenia, microangiopathic haemolytic anaemia (anaemia secondary to red blood cell fragmentation) and renal (kidney) failure. About 90 per cent of HUS cases are caused by a certain group of bacteria known as verocytotoxin-producing E.coli (VTEC). The most commonly associated strain is E.coli O157:H7. Sporadic cases of haemolytic uraemic syndrome (not associated with



diarrhoea) can be seen with HIV, malignancy, SLE. Treatment of sporadic HUS is with plasma exchange and fresh frozen plasma.



[ Q: 519 ] MRCPass - Nephrology

A haemodialysis patient has recurrent knee and ankle swelling and pains. Aspiration of the knee synovial fluid reveals negatively birefringent crystals.

*Which one of the following treatments is the least effective either acutely or in the chronic situation?*

- 1- Probenecid
- 2- Prednisolone
- 3- Increased dialysis
- 4- Allopurinol
- 5- Colchicine

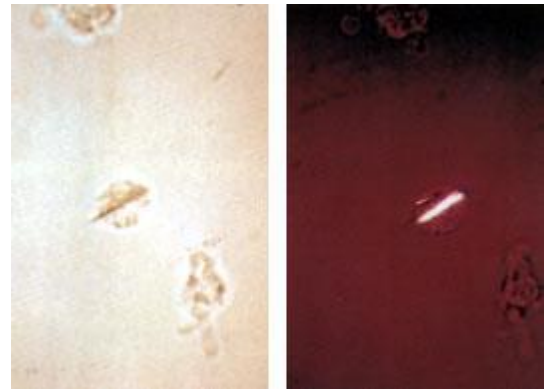
Answer & Comments

Answer: 1- Probenecid

Negative birefringence with polarised light demonstrates urate crystals, making the diagnosis consistent with gout. Probenecid is a uricosuric agent (reduces the reabsorption of uric acid), hence likely to produce little benefit in a patient who has significant renal impairment.

Allopurinol (xanthine oxidase inhibitor) will reduce urate production, prednisolone or colchicine have anti-inflammatory properties.

Haemodialysis will also increase urate clearance.



Intracellular monosodium urate crystal viewed under a polarized light microscope (right) and a conventional light microscope (left).



[ Q: 520 ] MRCPass - Nephrology

A 45 year old patient with chronic hepatitis C has a creatinine of 140  $\mu\text{mol/l}$ . His BP is 150/90. He has urine dipstick showing blood ++, protein +++.

*Which of the following might be demonstrated on the histology?*

- 1- Minimal change glomerulonephritis
- 2- Membranous glomerulonephritis
- 3- Focal segmental glomerulonephritis
- 4- Membranoproliferative glomerulonephritis
- 5- Glomerulosclerosis

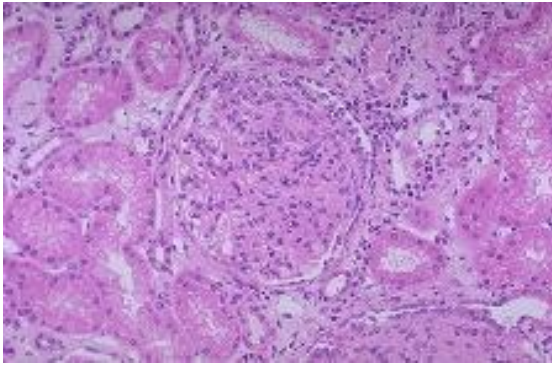
Answer & Comments

Answer: 4- Membranoproliferative glomerulonephritis

This is chronic hepatitis C infection. It is associated with cryoglobulinaemia (which may present as a vasculitic rash) and membranoproliferative glomerulonephritis.

Also, it (less commonly) can cause membranous glomerulonephritis.





The glomerulus has increased overall cellularity and increased mesangial cellularity in membranoproliferative glomerulonephritis.



[ Q: 521 ] MRCPass - Nephrology

A 34 year old patient has 4g of proteinuria over 24 hours. She is treated with corticosteroids.

*Which of the following predicts a good response to corticosteroid therapy in nephrotic syndrome?*

- 1- Hypertension
- 2- Haematuria
- 3- Proteinuria
- 4- The onset is within the first month of life
- 5- Proliferative changes are observed on renal biopsy

Answer & Comments

Answer: 3- Proteinuria

Proteinuria is highly selective, occurring in 75% of patients with minimal change, which is responsive to steroids.

There is poor response to steroids in membranous, membranoproliferative, focal segmental glomerulonephritis.

Hypertension is aggravated by steroids. Haematuria indicates that more sinister causes such as streptococcal infection may have occurred. Early onset nephrotic syndrome is correlated with severity, peak onset age is 2-4 yrs.

Mesangial proliferation may represent a subset of patients who respond poorly to steroids.



[ Q: 522 ] MRCPass - Nephrology

A 22 year old lady has a 5 year history of loin pains. She noticed recently that she had passed a small stone when passing urine. A 24 hour urine collection showed normal calcium and phosphate levels. Urinary levels of arginine, cystine, lysine and ornithine were elevated.

*Which of the following is true?*

- 1- Renal failure does not occur
- 2- The stone is radiolucent
- 3- There is accumulation of cystine in epithelial cells
- 4- There is tubular necrosis
- 5- The condition is autosomal dominant

Answer & Comments

Answer: 3- There is accumulation of cystine in epithelial cells

Cystinuria is an autosomal recessive defect in reabsorptive transport of cystine and the dibasic amino acids ornithine, arginine, and lysine from the luminal fluid of the renal proximal tubule and small intestine. The genetic defect impairs intestinal absorption and renal reabsorption of cystine, causing elevated urinary levels of cystine and subsequent crystallization and stone formation. The only phenotypic manifestation of cystinuria is cystine urolithiasis. Cystinuric patients usually present with renal colic.

Uncommon presentations include hematuria, chronic backache, and urinary tract infection. Twenty-five percent of symptomatic patients report their first stone in the first decade of life.



## [ Q: 523 ] MRCPass - Nephrology

A 50 year old man attends casualty concerned that on passing urine he also passed a small lump. He has a history of arthritis, diabetes and hypertension. His serum creatinine is 180 micromol/l and his albumin is 38 g/l. A frozen section is performed by a pathologist who reports that the lump is a renal papilla.

*What is the diagnosis related to?*

- 1- Diabetic nephropathy
- 2- Membranous nephropathy
- 3- Minimal change nephropathy
- 4- NSAID nephropathy
- 5- Hypertensive nephropathy

## Answer &amp; Comments

Answer: 4- NSAID nephropathy

This is a case of papillary necrosis due to analgesic nephropathy. This is due to chronic vasoconstriction of blood vessels within the kidney (prostaglandin reduction by NSAIDs).

Renal papillary necrosis (RPN) is the necrosis of the renal medullary pyramids and papillae brought on by a host of associated conditions and toxins. A useful mnemonic device for the conditions associated with RPN is POSTCARDS, which stands for the following:

- Pyelonephritis
- Obstruction of urinary tract
- Sickle cell
- Tuberculosis
- Cirrhosis of the liver
- Analgesic abuse
- Renal transplant rejection
- Diabetes mellitus
- Systemic vasculitis



## [ Q: 524 ] MRCPass - Nephrology

A 35 year old man presents with a history of recurrent episodes of haematuria. This is worse during episodes of upper respiratory infections and comes on within approximately 12-24 hours of development of pharyngitis. He also describes haematuria. Clinically he looks well, there is no oedema, blood pressure is 120/70 and creatinine is 100 µmol.

*The renal biopsy is likely to show:*

- 1- Proliferative glomerulonephritis with crescent formation
- 2- Mesangial proliferation
- 3- Minimal change
- 4- Podocyte proliferation
- 5- Basement membrane destruction

## Answer &amp; Comments

Answer: 2- Mesangial proliferation

The description of recurrent haematuria related to pharyngitis in a young male with no physical signs points towards IgA nephropathy (Berger's disease). The light microscopic feature of this is mesangial proliferation. Immunofluorescence would demonstrate IgA deposition in the mesangium as confluent masses or discrete granules.



## [ Q: 525 ] MRCPass - Nephrology

A 25 year old drug user, presented to hospital unwell. He has a past medical history of type 1 diabetes. He had injected cocaine into his leg a day ago. On examination, he was pale, BP was 70/40 mmHg, Temperature was 36°C. He complained of a painful, swollen, right leg.

Investigations showed:

- sodium 136 mmol/l
- potassium 5.9 mmol/l
- urea 15 mmol/l

creatinine 190  $\mu\text{mol/l}$

Creatine Kinase 12,000 (24-170) U/l

Urine dipstick showed myoglobinuria.

*What is the diagnosis?*

- 1- Rhabdomyolysis
- 2- Hypocalcaemic hypocalciuria
- 3- Rapidly progressive glomerulonephritis
- 4- Diabetic nephropathy
- 5- Endocarditis

#### Answer & Comments

Answer: 1- Rhabdomyolysis

Rhabdomyolysis results from muscle injury and the release of myoglobin, which is toxic to the renal tubules. Myoglobinuria usually occurs. Muscle cells also release creatinine kinase and potassium when they are injured.



[ Q: 526 ] MRCPass - Nephrology

*Which of the following options do you think would be the most appropriate in supporting a diagnosis of reflux nephropathy in a 35 year old woman with plasma creatinine 330 micromole/litre and a history of repeated urinary tract infections?*

- 1- Intravenous urography
- 2- CT of abdomen
- 3- MRI of abdomen
- 4- Isotopic imaging with  $^{99\text{m}}\text{Tc}$ -DTPA.
- 5- Renal ultrasound

#### Answer & Comments

Answer: 5- Renal ultrasound

Ultrasound is a good method of detecting renal scars. DMSA, which is taken up by tubular cells can be used to detect scars (as opposed to DTPA which is filtered by the glomerulus and not taken up by tubular cells, hence not good for detecting scarring).



[ Q: 527 ] MRCPass - Nephrology

A 75 year old diabetic man presented to his local hospital with unstable angina where he received conventional treatment with intravenous nitrates and heparin. His pain subsided but he subsequently developed recurrent episodes of "flash" pulmonary oedema and recalcitrant hypertension. These were accompanied by an decline in renal function over four weeks until eventually he became dependent on dialysis.

Severe hypertension and signs of peripheral vascular disease were found on physical examination, but there were no audible renal bruits. Non-blanching purpuric lesions suggestive of embolisation were noted on his toes.

Blood tests showed a marked peripheral blood eosinophilia of  $0.59 \times 10^9/\text{L}$  ( $< 0.40$ ) and a C3 complement component just below the lower limit of normal, at  $0.59 \text{ g/l}$  ( $0.6\text{-}1.6$ ). An angiogram performed using spiral computed tomography showed an atheromatous aorta but no evidence of renal artery stenosis. A percutaneous renal biopsy showed clefts in the lumen of intrarenal arterioles.

*What is the diagnosis?*

- 1- Diabetic nephropathy
- 2- Minimal change glomerulonephritis
- 3- Endocarditis
- 4- Cholesterol embolisation
- 5- Lupus nephritis

#### Answer & Comments

Answer: 4- Cholesterol embolisation

Cholesterol embolisation characterised by a classic triad of livedo reticularis acute renal failure, and eosinophilia. Occasionally the presentation is atypical, with fever, myalgia, and multiorgan involvement mimicking systemic vasculitis. CRP and ESR are typically elevated. Risk factors for cholesterol

embolism include hypertension, diabetes, and aortic aneurysm.



[ Q: 528 ] MRCPass - Nephrology

A 35 year old patient has proteinuria and suspected renal disease.

*In which one of the situations would corticosteroids be useful in treatment?*

- 1- Renal vein thrombosis
- 2- Minimal change disease
- 3- Scleroderma
- 4- Membranous nephropathy
- 5- Amyloidosis

Answer & Comments

Answer: 2- Minimal change disease

Out of all the options, minimal change disease is the most well known to be steroid responsive, with a good prognosis.





## [ Q: 529 ] MRCPass - Neurology

A 55 year old man patient presents with an 8 month history of progressive difficulty in swallowing, and dysarthria. He has lost 6 kg in weight. On examination he has a fasciculation on the tongue and a brisk jaw jerk.

*What is the likely diagnosis?*

- 1- Amyotrophic lateral sclerosis
- 2- Subacute combined degeneration of the cord
- 3- Senile dementia
- 4- Multiple sclerosis
- 5- Guillain Barre syndrome

## Answer &amp; Comments

Answer: 1- Amyotrophic lateral sclerosis

A fifth of patients with amyotrophic lateral sclerosis have bulbar involvement. This is a classic presentation of a patient with this variant of motor neuron disease.



## [ Q: 530 ] MRCPass - Neurology

A 60 year old man is brought has had 6 seizures over the past week. The seizures are generalised tonic clonic.

He has complained of a severe headache, and examination shows increased tone on the left with mild hemiparesis. There is papilloedema in both eyes. An emergency MRI scan shows a mass in the right cerebral hemisphere.

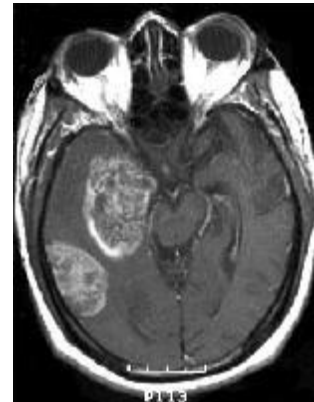
*What is the most likely diagnosis?*

- 1- Medulloblastoma
- 2- Craniopharyngioma
- 3- Meningioma
- 4- Glioblastoma
- 5- Astrocytoma

## Answer &amp; Comments

Answer: 4- Glioblastoma

The rapid onset of symptoms make it likely that this is a malignant lesion, and the most common malignancy of the central nervous system is a glioma. Glioblastoma multiforme is by far the most common and most malignant of the glial tumors.



Glioblastoma



## [ Q: 531 ] MRCPass - Neurology

A 42 year old man has weakness in the extensors of the upper limb and flexors of the lower limb muscles. His speech has a nasal quality. There is tongue fasciculation.

*What is the likely diagnosis?*

- 1- Wilson's disease
- 2- Creutzfeldt Jakob disease
- 3- Motor neuron disease
- 4- Myasthenia gravis
- 5- Thyrotoxicosis

## Answer &amp; Comments

Answer: 3- Motor neuron disease

In motor neuron disease, UMN signs include muscle spasticity, slowed recruitment of voluntary muscle strength, weakness especially in the extensors of the upper limb and flexors of the lower limb muscles, pseudobulbar palsy.



LMN features include muscle wasting and fasciculation, depressed reflexes and bulbar palsy. Onset of the disease is usually in mid to late adult life with the incidence increasing with advancing age.



[ Q: 532 ] MRCPass - Neurology

Following a football injury, a man has developed foot drop and has lost sensation to the dorsal part of the foot.

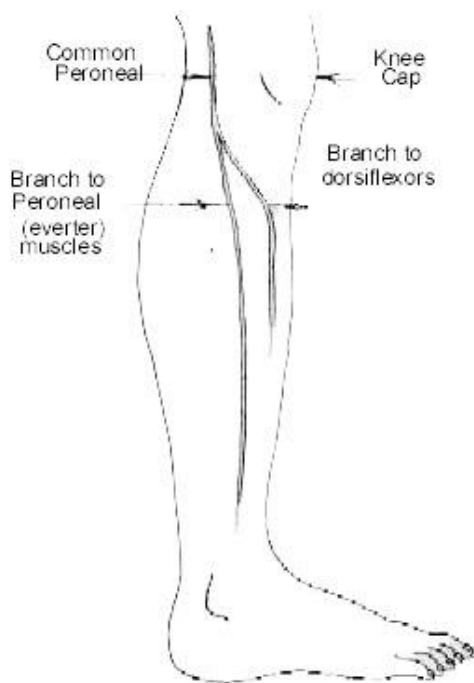
*Which nerve is most likely to have been involved?*

- 1- Tibial
- 2- Sciatic
- 3- Common peroneal
- 4- Femoral
- 5- Gluteal

Answer & Comments

Answer: 3- Common peroneal

The common peroneal nerve controls foot eversion and dorsiflexion. Sensation is supplied to the antero-lateral part of the leg and the dorsum of the foot.



[ Q: 533 ] MRCPass - Neurology

A 70 year old woman with a history of hypertension and insulin-dependent diabetes mellitus presented with new onset of uncontrolled violent movements of the left extremities accompanied by headaches.

Neurological examination was normal except for the constant, relentless, violent movement of her left arm and leg. Although she was fully awake, alert, and oriented, she could not stop the abnormal movements except for a short period of time.

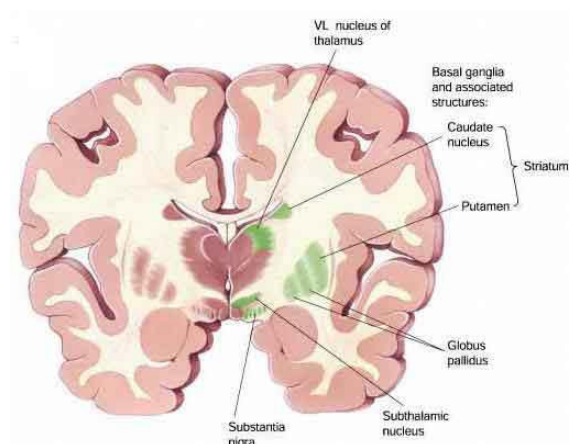
*This presentation is likely to be due to a lesion in the:*

- 1- Substantia nigra
- 2- Globus pallidus
- 3- Putamen
- 4- Hypothalamus
- 5- Subthalamic nucleus

Answer & Comments

Answer: 5- Subthalamic nucleus

Hemiballismus is a rare disorder characterised by involuntary wild flinging movements of the limbs. It is usually unilateral (hence hemiballismus) and is caused by lesions in the contralateral subthalamic nucleus.



[ Q: 534 ] MRCPass - Neurology

A 20 year old lady presents with a

history of a single tonic-clonic seizure. She had not been taking any illicit drugs. She also reports the occurrence of occasional absent spells and brief jerking of his upper limbs, when she has been out late partying.

*Which of the Following drugs is most appropriate?*

- 1- Lorazepam
- 2- Carbamazepine
- 3- Phenytoin
- 4- Gabapentin
- 5- Sodium valproate

#### Answer & Comments

Answer: 5- Sodium valproate

This patient is likely to have juvenile myoclonic epilepsy (JME), and valproate is the treatment of choice. Juvenile myoclonic epilepsy (JME) is an idiopathic generalized epileptic syndrome characterized by myoclonic jerks, generalized tonic-clonic seizures (GTCSs), and sometimes absence seizures.

These can be precipitated when the patient is sleep deprived. Apart from sodium valproate, lamotrigine and topiramate can also be used.



#### [ Q: 535 ] MRCPass - Neurology

A 30 year old patient has recurrent episodes of severe, unilateral, pain felt in the region of the eye and forehead associated with lacrimation.

*The most likely diagnosis is:*

- 1- Migraine
- 2- Subarachnoid haemorrhage
- 3- Retro-orbital tumour
- 4- Cluster headache
- 5- Migranous neuralgia

#### Answer & Comments

Answer: 4- Cluster headache

Cluster headache causes severe, usually unilateral, pain felt in the region of the eye and forehead associated with lacrimation, conjunctival injection and occasionally transient Horner's syndrome.

Oxygen and triptans may arrest attacks, prophylaxis with propranolol, pizotifen, and especially verapamil may prevent further episodes.



#### [ Q: 536 ] MRCPass - Neurology

A 70 year old man has a 2 month history of progressive weakness in his legs. He has weakness in the hip and knee distribution. Knee and ankle reflexes are brisk. Plantars are upgoing bilaterally. He has sensory loss from legs upwards towards the T5 level.

*Which one of the Following is a likely diagnosis?*

- 1- Subacute combined degeneration of cord
- 2- Friedrich's ataxia
- 3- Meningioma
- 4- Hereditary spastic paraparesis
- 5- Tropical spastic paraparesis

#### Answer & Comments

Answer: 3- Meningioma

A meningioma involving high in the spinal cord (thoracic region) can cause a T5 level. The rest are all causes of spastic paraparesis but are unlikely to cause a sensory level on clinical examination.



Spinal Cord Meningioma



## [ Q: 537 ] MRCPass - Neurology

A 50 patient is assessed for gradually progressive dementia over several months. Whilst he was on the ward he was noticed to have myoclonic jerks of his hands.

*What is the likely cause?*

- 1- HIV encephalopathy
- 2- Parkinson's disease
- 3- Alzheimer's disease
- 4- Pick's disease
- 5- Creutzfeldt Jakob disease

## Answer &amp; Comments

Answer: 5- Creutzfeldt Jakob disease

Creutzfeldt Jakob disease (CJD) usually occurs in the 45-75 year age group and most commonly presents as a rapidly evolving multifocal dementia with myoclonic jerks in the latter stages. New variant CJD, which has been strongly linked to infection from meat products of cows with BSE, tends to present with behavioural and psychiatric disturbances progressing to inco-ordination and dementia with myoclonic jerks.



## [ Q: 538 ] MRCPass - Neurology

A 45 year old man has presented with lower back pain, radiating to his buttocks, associated with lower limb parathesia over the last few days. He is unable to walk due to leg weakness. The ankle reflexes are absent.

*What is the diagnosis?*

- 1- Disc prolapse
- 2- Transverse myelitis
- 3- Guillain Barre syndrome
- 4- Multiple sclerosis
- 5- Friedrich's ataxia

## Answer &amp; Comments

Answer: 3- Guillain Barre syndrome

Guillain Barré syndrome is preceded by respiratory or gastrointestinal symptoms in two-thirds, but not all, cases. Lower back pain, often radiating to the buttocks occurs in a third of cases. Difficulty walking in this case is due to distal weakness and absent distal reflexes suggest GBS.



## [ Q: 539 ] MRCPass - Neurology

A 62 year old man presents with a resting tremor of his right arm. He was found to have cogwheeling and bradykinesia. His gait is shuffling in nature.

*Which one of the Following drugs is most likely to help her tremor?*

- 1- Amantadine
- 2- Benzhexol
- 3- Bromocriptine
- 4- Co-Careldopa
- 5- Selegiline

## Answer &amp; Comments

Answer: 2- Benzhexol

Benzhexol is an anticholinergic drug (used to alleviate tremors in parkinson's disease). The first line treatment is with L-dopa which is the metabolic precursor of L-dopa. Benzhexol is not effective against bradykinesia.



[ Q: 540 ] MRCPass - Neurology

A 46 year old female had a traumatic left sided tooth extraction 6 years ago. Since then she is complaining of facial pain mainly over upper part of left face with intermittent exacerbation. Occasionally the pain radiates to right side of the face.

*What is the likely diagnosis?*

- 1- Atypical facial pain
- 2- Trigeminal neuralgia
- 3- Dry socket cyst
- 4- Bell's palsy
- 5- Periodontitis

Answer & Comments

**Answer:** 1- Atypical facial pain

Complicated dental procedures or other forms of trauma can lead to a form of atypical facial pains which is also known as post traumatic facial pain/ neuralgia. The pain is usually self limiting after several years.



[ Q: 541 ] MRCPass - Neurology

A 25 year old secretary has had several episodes of brief jerking of the right arm over the past few weeks.

There is no loss of consciousness. A CT scan of the head is unremarkable.

*Which is the best medication to commence?*

- 1- Carbamazepine
- 2- Phenytoin
- 3- Lorazepam
- 4- Diazepam
- 5- Levodopa

Answer & Comments

**Answer:** 1- Carbamazepine

Brief episodes of jerking suggests simple partial seizures. Carbamazepine is first line therapy for this.



[ Q: 542 ] MRCPass - Neurology

A 63 year old man who has been diagnosed with a glioma is commenced on chemotherapy. 4 days later, he begins to behave strangely, and has suicidal ideation.

*Which one of the Following is most likely?*

- 1- Vincristine encephalitis
- 2- Hyponatraemia
- 3- Steroid psychosis
- 4- Hypoglycaemia
- 5- Hypocalcaemia

Answer & Comments

**Answer:** 3- Steroid psychosis

Incidence of steroid associated cognitive changes including psychosis are high particularly when high dose steroids are used (e.g. dexamethaxone).



[ Q: 543 ] MRCPass - Neurology

A 75 year old man was admitted to the hospital after being unable to cope. His neighbours say that he had been increasingly confused over the last month and two weeks ago was seen to have a generalised seizure. He had no neurological signs on examination apart from an upgoing plantar on the left.

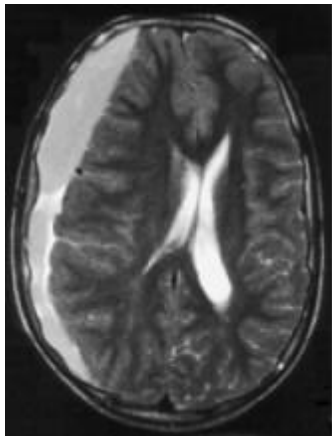
*Which of the Following is most likely?*

- 1- Subarachnoid haemorrhage
- 2- Meningitis
- 3- Subdural haematoma
- 4- Parkinson's syndrome
- 5- Meningioma

## Answer &amp; Comments

**Answer:** 3- Subdural haematoma

A history of confusion along with a possible seizure/fall in the elderly should alert towards subdural haematoma.



Subdural Haematoma



## [ Q: 544 ] MRCPass - Neurology

A 65 year old man has a history of hypertension. He presents with sudden onset dysarthria, vomiting hiccup and vertigo.

On examination, he has a right sided Horner's syndrome, right-sided cerebellar ataxia, loss of pain and temperature sensation on the right hand side of the face, and loss of pain and temperature sensation in the left upper and lower limbs.

*What is the likely diagnosis?*

- 1- Cerebellar infarct
- 2- Inferior parietal infarct
- 3- Superior temporal infarct
- 4- Subthalamic nucleus infarct
- 5- Lateral medullary infarct

## Answer &amp; Comments

**Answer:** 5- Lateral medullary infarct

In the lateral medullary syndrome (inferior cerebellar artery involvement), 9th and 10th nerve involvement leads to dysphagia and

dysarthria. There is also ipsilateral Horner's syndrome and facial sensory loss, and contralateral pain/ temperature sensory loss to upper and lower limbs.



## [ Q: 545 ] MRCPass - Neurology

A 60 year old man presents with drowsiness and confusion. A friend says he has been confabulating about having his wallet stolen. On examination, he is unkempt, his pupil reflexes are normal and eye movements are normal. There were otherwise no focal neurological deficits. A CT scan of the brain showed mild cerebral atrophy. He has a MCV of 105 fl.

*Which diagnosis is most likely?*

- 1- Transient global amnesia
- 2- Korsakoff's psychosis
- 3- Wernicke's encephalopathy
- 4- Alzheimer's
- 5- Pick's disease

## Answer &amp; Comments

**Answer:** 2- Korsakoff's psychosis

The high MCV suggests heavy alcohol drinking. He is delusional (having his wallet stolen) and also there are no signs of nystagmus or cerebellar signs to support Wernicke's encephalopathy.

Short term memory loss, amnesia and personality changes are also seen in Korsakoff's psychosis.



## [ Q: 546 ] MRCPass - Neurology

A 17 year old boy with mild learning disability presents for assessment. He was apparently well 5 years ago, when he developed jaundice which persisted for 4 months. He was found to have difficulty speaking, walking up the stairs and he also had choreoathetoid movements of the arms.

On examination, there was jaundice, but no clubbing, cyanosis or peripheral lymphadenopathy. A neurological examination showed weakness and wasting of muscles acting on the shoulder and hip joints and brisk deep reflexes. The plantar responses were flexor. There were no extrapyramidal signs. The patient had Kayser Fleisher rings confirmed by slit-lamp examination.

*What is the likely diagnosis?*

- 1- New variant CJD
- 2- Alzheimer's disease
- 3- Motor neuron disease
- 4- Wilson's disease
- 5- Pick's disease

#### Answer & Comments

Answer: 4- Wilson's disease

Wilson disease is a rare autosomal recessive inherited disorder of copper metabolism. The condition is characterized by excessive deposition of copper in the liver, brain, and other tissues.

Wilson's disease usually presents at ages less than 40. Hepatic dysfunction is the presenting feature in more than half of patients. Apart from hepatitis, neuropsychiatric presentation and movement disorders are common presentations. Kayser-Fleischer rings are observed in up to 90% of individuals with symptomatic Wilson disease.

Manifestations include dystonia, choreoathetoid movements, spasticity, grand mal seizures, rigidity, and flexion contractures.



[ Q: 547 ] MRCPass - Neurology

A 60 year old man is on high dose prednisolone for a diagnosis of giant cell arteritis 4 months ago. He complains of a headache, which had worsened for the past week and double vision.

On examination, there is neck stiffness, and right sided 7th nerve palsy. His temperature is 38 degrees. A lumbar puncture reveals a protein of 0.8 g/l, glucose of 3.5, WCC of 30 (predominant neutrophils).

*What is the most likely causative organism?*

- 1- Listeria monocytogenes
- 2- Mycobacterium tuberculosis
- 3- Mycoplasma pneumoniae
- 4- Borrelia burgdoferi
- 5- Herpes simplex

#### Answer & Comments

Answer: 1- Listeria monocytogenes

The lumbar puncture findings are consistent with a bacterial meningitis but the glucose is not low enough to suggest TB. Listeria monocytogenes is an aerobic and facultatively anaerobic gram-positive bacillus. The risk of listeriosis is markedly increased in immunocompromised patients, particularly among those undergoing renal transplantation, receiving high doses of corticosteroids, or suffering with AIDS or cancer.

Ampicillin or penicillin has generally been recommended as the treatment of choice.



[ Q: 548 ] MRCPass - Neurology

A 45 year old lady presents with a week's history of spontaneous, deep, right shoulder pain radiating to the neck.

There is also weakness and then wasting of the right deltoid, spinati and triceps muscles.

*Which is the likely diagnosis?*

- 1- Spinobulbar dystrophy
- 2- C5 and C6 myelopathy
- 3- Guillain barre syndrome
- 4- Rotator cuff tendonitis
- 5- Brachial neuritis



## Answer &amp; Comments

**Answer:** 5- Brachial neuritis

Idiopathic brachial neuritis is an immune-mediated disorder, often preceded by an upper respiratory tract infection or immunisation. The initial feature is the abrupt onset of unilateral arm pain or shoulder pain. There is also evolving weakness, which is worst 2-3 weeks after the onset of pain.



[ Q: 549 ] MRCPass - Neurology

A 60 year old man presents with difficulty with his mobility. He has increased tone, bradykinesia, a pill rolling tremor and a shuffling gait.

*Which medication should be commenced first?*

- 1- Bzotropine
- 2- Amantadine
- 3- Selegiline
- 4- Apomorphine
- 5- Co-careldopa

## Answer &amp; Comments

**Answer:** 5- Co-careldopa

Co-careldopa is the first medication used to increase dopaminergic activity in the basal ganglia. Apomorphine is used for on-off fluctuations. Bzotropine is used for anticholinergic side effects. Selegiline is an MAO inhibitor, and Amantadine is an antiviral drug. Both are used as a second line drugs. Apomorphine is used for on-off fluctuations.



[ Q: 550 ] MRCPass - Neurology

A 50 year old man presents with a 5 year history of headaches. The pain has gradually worsened and is now present daily, particularly on waking. He describes the pain as dull, generalised and constant. It is exacerbated by bright light. Neurological examination is unremarkable. She needs to

take at least two paracetamol and two tramadol tablets per day.

*Which is the likely diagnosis?*

- 1- Cluster headaches
- 2- Analgesic induced headaches
- 3- Migrainous headaches
- 4- Space occupying tumour
- 5- Trigeminal neuralgia

## Answer &amp; Comments

**Answer:** 2- Analgesic induced headaches

Frequent use of some immediate-relief medications can result in recurring or persistent headache in those with pre-existing headache and an individual susceptibility. Three or more simple analgesics (aspirin and/or acetaminophen) a day (more than 1000 mg) more often than 5 days a week.

Frequent use of short-acting NSAIDs such as ibuprofen and also opiate based drugs can also be a cause.



[ Q: 551 ] MRCPass - Neurology

A 60 year old patient has diplopia looking to the left. When the left eye is covered, the outer image disappears.

*Which nerve is involved?*

- 1- Left abducens
- 2- Right abducens
- 3- Left trochlear
- 4- Right trochlear
- 5- Left oculomotor

## Answer &amp; Comments

**Answer:** 1- Left abducens

Covering the affected eye causes the false image (outer image) to disappear. In this case, the left eye is involved hence left lateral rectus (abducens nerve).



## [ Q: 552 ] MRCPass - Neurology

A 22 year old man had an accident 3 years ago. During that time he was documented to have a T12 lesion on the spinal cord. He now presents with numbness on his trunk.

On examination, there is reduced sensation to pin prick from T6 to T10.

*What is the most likely cause of this?*

- 1- Brown sequard syndrome
- 2- Subacute combined degeneration of the cord
- 3- Anterior spinal artery thrombosis
- 4- Post traumatic syrinx
- 5- Arteriovenous malformation

## Answer &amp; Comments

Answer: 4- Post traumatic syrinx

Post traumatic syringomyelia (PTS) refers to the development and progression of a cyst filled with cerebrospinal fluid (CSF) within the spinal cord. Other symptoms include increased weakness, numbness, increased spasticity, and hyperhidrosis (increased sweating).

Ascending sensory level and sensory dissociation (selective loss of pain and temperature sensation) are very sensitive indicators for detecting progressive PTS. MRI is the preferred initial imaging study for the diagnosis of PTS.



## [ Q: 553 ] MRCPass - Neurology

A 42 year old woman presents with a history of headaches. She also reports menstrual irregularities. On examination, she was noted to be obese. Fundoscopy revealed bilateral papilloedema. Tone, power and reflexes in the limbs were normal.

Investigations show a normal CT scan and MRI. EEG normal. Lumbar puncture reveals

elevated CSF pressure but the constituents of CSF are normal.

*In this particular patient, which of the Following would suggest that a complication has arisen?*

- 1- Bitemporal hemianopia
- 2- Loss of colour vision
- 3- 4th nerve palsy
- 4- Visual loss
- 5- Torticollis

## Answer &amp; Comments

Answer: 4- Visual loss

The diagnosis is idiopathic intracranial hypertension (benign intracranial hypertension).

In this condition papilloedema may result in an enlarged blind spot.

Unilateral visual loss would suggest infarction of the optic nerve consequent on severe and long standing papilloedema.



## [ Q: 554 ] MRCPass - Neurology

A 70 year old man presents with sudden onset dysphagia and dysarthria, vomiting hiccup and vertigo.

On examination he has a right sided Horner's syndrome, right-sided cerebellar ataxia, loss of pain and temperature sensation on the right hand side of the face and loss of pain and temperature sensation in the left upper and lower limbs.

*Where is the lesion?*

- 1- Pons
- 2- Lateral medulla
- 3- Cerebellum
- 4- Midbrain
- 5- Tectum

## Answer &amp; Comments

**Answer:** 2- Lateral medulla

The patient has the lateral medullary syndrome.

Multiple areas are involved : 9th and 10th nerve - dysphagia and dysarthria Vestibular nuclei - vertigo Inferior cerebellar peduncle - ipsilateral cerebellar ataxia Descending autonomic fibres - Horner's syndrome Fifth nerve nucleus - loss of pain and temperature sensation over the face (ipsilateral) Lateral lemniscus - loss of pain and temperature sensation in the contralateral limbs



[ Q: 555 ] MRCPass - Neurology

A patient presents with weakness of knee extension and ankle inversion.

*Which of the Following nerve roots could be damaged?*

- 1- L2
- 2- L3
- 3- L4
- 4- L5
- 5- S1

## Answer &amp; Comments

**Answer:** 3- L4

L4 is involved in knee extension and ankle inversion. The tibial nerve carries L4 & L5 roots.



[ Q: 556 ] MRCPass - Neurology

A 25 year old man has come from Mexico 5 years ago. Since a year ago, he has had two tonic clonic seizures a week.

On examination, he appears well, with no focal neurological deficit. A CT scan shows multiple calcified cystic lesions in the brain.

*Which diagnosis is likely?*

- 1- Neurosarcoid

2- Neurocysticercosis

3- Multiple sclerosis

4- Cerebral toxoplasmosis

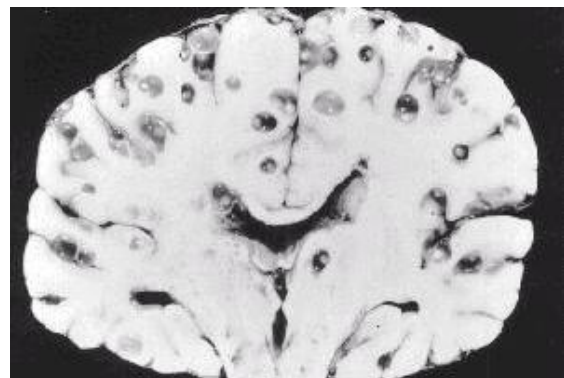
5- Tuberculosis

## Answer &amp; Comments

**Answer:** 2- Neurocysticercosis

Neurocysticercosis is caused by *Taenia solium* (pork tapeworm). There may be seizures due to localised inflammation that accompanies their degeneration in the cerebral cortex when calcified cysts occur. This disease is found in South America and Asia.

Neurocysticercosis typically is benign, and most lesions resolve spontaneously within 2-3 months. An enzyme-linked immunotransfer blot (ELISA) assay of a patient's serum may confirm the diagnosis. Albendazole is the recommended treatment.



Neurocysticercosis



[ Q: 557 ] MRCPass - Neurology

A 42 year old lady presents with weakness, diplopia and fatigue. She has a past medical history of rheumatoid arthritis.

On examination there was bilateral partial ptosis and weakness of abduction of both eyes.

*What is the likely diagnosis?*

- 1- Myasthenia gravis
- 2- Mononeuritis multiplex
- 3- Guillain Barré syndrome

- 4- Paraneoplastic syndrome  
 5- Lambert Eaton myasthenic syndrome

### Answer & Comments

Answer: 1- Myasthenia gravis

The most likely diagnosis is myasthenia gravis. There is an association between myasthenia gravis, pernicious anaemia, systemic lupus erythematosus and rheumatoid arthritis. The condition is more common in women with a peak incidence around the age of 30. It characterised by fatigability of the proximal limb muscles, ocular and bulbar muscles. Reflexes are initially preserved but may be fatigable.



### [ Q: 558 ] MRCPass - Neurology

A 30 year old man presents with a 6 month history of recurrent episodes altered behaviour. During these episodes, he develops a motionless stare with associated lip smacking, grimacing, chewing movements, scratching or gesturing. His partner describes him as having labile emotions, he may get sudden outbursts of aggression or agitation.

*Which of the Following is the likely diagnosis?*

- 1- Transient global amnesia  
 2- Frontal lobe epilepsy  
 3- Temporal lobe epilepsy  
 4- Parietal lobe lesion  
 5- Migraine

### Answer & Comments

Answer: 3- Temporal lobe epilepsy

The features of seizures beginning in the temporal lobe can be extremely varied, but certain patterns are common. In temporal lobe epilepsy, there may be a mixture of different feelings, emotions, thoughts, and experiences, which may be familiar or completely foreign. Temporal lobe epilepsy

may, for example, cause sudden outbursts of unexpected aggression or agitation, or it may be characterized by aura-like phenomena.

Complex partial seizures are characterized by impaired awareness. They lose awareness and tend to have a motionless stare accompanied by automatisms -- stereotyped, repetitive, involuntary movements such as lip smacking, chewing, picking at objects, scratching, and gesturing.

In some cases, a series of old memories resurfaces. Hallucinations of voices, music, people, smells, or tastes may occur. These features are called "auras" or "warnings." They may last for just a few seconds, or may continue as long as a minute or two.

Carbamazepine and phenytoin are used to treat the condition.



### [ Q: 559 ] MRCPass - Neurology

A 55 year old drug user who is homeless presents with lethargy. General examination reveals poor hygiene and a sacral sore. He has bilateral ptosis, and difficulty swallowing. There is also general weakness in all limbs. His lethargy is worse in the evenings.

*Which of the Following is the likely diagnosis?*

- 1- Myasthenia gravis  
 2- Lambert eaton myasthenic syndrome  
 3- Botulism  
 4- Motor neuron disease  
 5- HIV neuropathy

### Answer & Comments

Answer: 3- Botulism

The main differentials are myasthenia gravis, LEMS and botulism, but in this context botulism is more likely. Botulism is a paralytic disease caused by the neurotoxins of *Clostridium botulinum*. Wound botulism, caused by systemic spread of toxin produced

by organisms inhabiting wounds, trauma, surgery and subcutaneous heroin injection.

The neurologic symptomatology often has been described as a progressive, descending weakness or paralysis that affects muscles innervated by the cranial nerves. Respiratory difficulty arises from airway obstruction and diaphragmatic weakness. Diplopia, dysarthria, dry mouth, and generalized weakness are among the most common presenting symptoms.



[ Q: 560 ] MRCPass - Neurology

A 50 year old teacher develops a sided facial weakness in association with hearing loss and pain in the right ear.

On examination, there is a vesicular rash over the right ear, and right lower motor neuron 7th nerve palsy.

*What is the likely cause?*

- 1- Lyme disease
- 2- Herpes zoster
- 3- Diabetes
- 4- Polyarteritis nodosa
- 5- Syphilis

Answer & Comments

Answer: 2- Herpes zoster

This is Ramsay-Hunt syndrome. The primary pathophysiology of Ramsay Hunt syndrome is located in the geniculate ganglion of the seventh cranial nerve (CN VII).

Classically, Ramsay Hunt syndrome has been associated with VZV. It is associated with 7th nerve palsy, vertigo, ipsilateral hearing loss and tinnitus.



[ Q: 561 ] MRCPass - Neurology

A 55 year old man has left sided

hearing loss and vertigo. On examination, he has an absent corneal reflex on the left. There is also mild left sided facial weakness.

*Which one of the Following is most likely?*

- 1- Frontal lobe tumour
- 2- Cavernous sinus thrombosis
- 3- Ramsay Hunt syndrome
- 4- Cerebellopontine angle tumour
- 5- Syringomyelia

Answer & Comments

Answer: 4- Cerebellopontine angle tumour

Cerebellopontine angle (CPA) tumors can cause vertigo, unilateral hearing loss. Large tumors may cause subtle facial weakness, decreased corneal reflex, and facial dysesthesia. If there was ophthalmoplegia or chemosis, then a cavernous sinus thrombosis would be more likely (it can also cause absent corneal reflexes).



[ Q: 562 ] MRCPass - Neurology

A 60 year old woman with headache and nausea is suspected of having posterior cerebral artery thrombosis.

*Which of the Following is a recognised feature of this occurrence?*

- 1- Cerebellar ataxia
- 2- Hemiparesis
- 3- Homonymous hemianopia
- 4- Third nerve palsy
- 5- Sixth nerve palsy

Answer & Comments

Answer: 3- Homonymous hemianopia

The posterior cerebral artery supplies the occipital lobe and occlusion causes damage to the visual cortex, resulting in homonymous hemianopia.



Posterior Cerebral Artery Infarct



## [ Q: 563 ] MRCPass - Neurology

A 35 year old woman wakes up with a sudden onset severe sharp headache. She has no neurological signs. CT of her head is normal.

*What is the best next investigation?*

- 1- MRV
- 2- Lumbar puncture
- 3- Serum electrophoresis
- 4- EEG
- 5- Bone scan

## Answer &amp; Comments

Answer: 2- Lumbar puncture

The diagnosis of subarachnoid haemorrhage needs to be excluded in a patient with acute sudden onset severe headache. The CSF sample should be sent for xanthochromia. Lumbar puncture is recommended 12 hours after the event to allow xanthochromia to develop. It is a yellowish pigment (subtle and needs spectrophotometry) which indicates the presence of bilirubin in the CSF.



## [ Q: 564 ] MRCPass - Neurology

A 30 year old man has a history of epilepsy. He was found on the street having a seizure and was brought to A+E. Rectal

diazepam had been given by the ambulance crew. His seizure lasts more than 15 minutes.

*What is the best management step?*

- 1- Intravenous lorazepam
- 2- Intravenous phenytoin
- 3- Oral carbamazepine
- 4- Intravenous phenobarbitone
- 5- CT scan of the head

## Answer &amp; Comments

Answer: 2- Intravenous phenytoin

This patient has status epilepticus. He has not responded to a benzodiazepine and hence the next step is to load with intravenous phenytoin at a dose of 15mg/kg.



## [ Q: 565 ] MRCPass - Neurology

A 60 year old man is a vegetarian and presents with lethargy. He has frequent diarrhoea and mentions that he eats mostly maize.

On examination, he has an erythematous rash across his face and chest. He is confused and disorientated. On examination, he has an MMSE score of 21 /30. Tone and reflexes are normal but he is weak throughout the body.

*Which vitamin is his diet likely to be deficient?*

- 1- Thiamine
- 2- B12
- 3- Niacin
- 4- Vitamin C
- 5- Vitamin A

## Answer &amp; Comments

Answer: 3- Niacin

The diagnosis is pellagra. There is a triad of dementia, diarrhoea and dermatitis. Niacin (nicotinamide or nicotinic acid) deficiency causes pellagra only if tryptophan, an amino



acid, is also deficient. People who live in areas where maize (Indian corn) is the main food source are at risk of developing pellagra because maize is low in niacin and tryptophan.

Pellagra affects the skin, digestive tract, and brain. A photosensitive rash may occur. Skin abnormalities are persistent, and the affected areas may become brown and scaly.

The whole digestive tract is affected. Other symptoms include nausea, vomiting, constipation, and diarrhea. Later, fatigue, insomnia, and apathy develop. Encephalopathy usually follows. It is characterized by confusion, disorientation, hallucinations, and memory loss.



Photosensitive rash seen in Pellagra



[ Q: 566 ] MRCPass - Neurology

A 45 year old woman has sensory loss and wasting of the small hand muscles. On examination, she also has a right sided Horner's syndrome. Her arms demonstrate thickening of the subcutaneous tissues. There is also evidence of Charcot's joints on the wrists.

*What is the diagnosis?*

- 1- Hereditary spinocerebellar ataxia
- 2- Hereditary spastic paraparesis
- 3- Motor neuron disease
- 4- Syringomyelia
- 5- Multiple sclerosis

Answer & Comments

Answer: 4- Syringomyelia

Syringomyelia is a chronic disorder characterised by the presence of glial-lined cavities situated in the central part of the spinal cord.

Recognised causes include Chiari type I malformation, central cord tumours, basal arachnoiditis and trauma.

There may be sensory loss, wasting of the small hand muscles, uni- or bilateral Horner's syndrome, abnormalities of swallowing, thickening of subcutaneous tissues, atrophy and decalcification of bones, development of Charcot's joints and Chiari I malformation (due to arachnoiditis).



[ Q: 567 ] MRCPass - Neurology

A 27 year old lady presents with a severe headache, which woke her up from sleep. She is not pregnant and was on no drugs in particular she was not on hormonal contraception. On examination she was afebrile and alert. On examination of the optic fundus the cup of the optic disc was filled and the medial margins of the disc were blurred. There was no other CNS abnormality, in particular no neck stiffness. A CT scan was as normal.

*What is the likely diagnosis?*

- 1- Meningioma
- 2- Sagittal sinus thrombosis
- 3- Benign intracranial hypertension
- 4- Migraine
- 5- Meningitis

Answer & Comments

Answer: 2- Sagittal sinus thrombosis

This is the most likely cause, despite not being pregnant or on the OCP. In only 10% of cases is cerebral venous thrombosis due to damage

to the vessel wall by infection, tumour or trauma.

Commonest causes are inherited disorders of coagulation of which factor V Leiden mutation is found in around 20% of cases. Often there is combination of causative factors: e.g. protein S deficiency and child birth, pregnancy and Behcet's disease, OCP and factor V Leiden mutation.



[ Q: 568 ] MRCPass - Neurology

A 25 year old female patient presents with a 5-day history of ascending muscle weakness in both hands and feet. EMGs confirm acute demyelinating sensory and motor neuropathy.

*What treatment should be started?*

- 1- Phenytoin
- 2- Diazepam
- 3- Amitriptyline
- 4- Intravenous immunoglobulin
- 5- Pyridostigmine

Answer & Comments

Answer: 4- Intravenous immunoglobulin

The diagnosis is Guillain Barre syndrome. It is preceded by diarrhea (e.g. campylobacter) and chest infections (e.g. mycoplasma) in two thirds of cases. Autonomic dysfunction and hyporeflexia are associated. Studies have shown that plasma exchange and IVIg are equally effective in treating people within two to four weeks of onset of GBS.



[ Q: 569 ] MRCPass - Neurology

A 32 year old man has difficulty with his vision. On examination he has impaired adduction of the right eye looking left. The left eye has jerky nystagmus.

*Which investigation is most likely to yield a diagnosis?*

- 1- Nerve conduction studies
- 2- CT of the head
- 3- Paired CSF and serum for oligoclonal bands
- 4- Serum copper and caeruloplasmin
- 5- Visual evoked potentials

Answer & Comments

Answer: 3- Paired CSF and serum for oligoclonal bands

The clinical scenario is internuclear ophthalmoplegia.

This is most commonly seen in multiple sclerosis. MRI of the brain and CSF are the best diagnostic tests. In this scenario the lesion is in the right medial longitudinal fasciculus.



Internuclear ophthalmoplegia - patient looking to the left



[ Q: 570 ] MRCPass - Neurology

A patient has, on examination, weakness in plantar flexion and foot inversion on the left. He also is unable to tiptoe on the same foot. Ankle jerk is absent.

*Which nerve lesion is most likely?*

- 1- Common peroneal nerve
- 2- L4 nerve root
- 3- Tibial nerve
- 4- Sciatic nerve
- 5- Femoral nerve

Answer & Comments

Answer: 3- Tibial nerve

The tibial nerve supplies the gastrocnemius muscle and leads to the above findings. The common peroneal nerve causes weakness of eversion and dorsiflexion.



[ Q: 571 ] MRCPass - Neurology

A 50 year old man has subjectively diminished light touch and pinprick sensation in the left hand extending to above the elbow. Joint position sense is intact. He has difficulty distinguishing a cigarette from a pen using the right hand with his eyes closed. His two-point discrimination is 11 mm.

*Where is the lesion?*

- 1- Anterior frontal
- 2- Posterior frontal
- 3- Anterior parietal
- 4- Posterior parietal
- 5- Cingulate gyrus

Answer & Comments

Answer: 3- Anterior parietal

The sensory signs described here are indicative of a lesion of the anterior parietal cortex (mid postcentral gyrus). The cingulate gyrus is part of the limbic system (mood and emotions).



[ Q: 572 ] MRCPass - Neurology

A 55 year old man has been progressively getting more confused. His symptoms began about three years ago when he noticed leg stiffness. At present his entire body feels stiff and he has a resting tremor in the limbs. His writing has become small. Over the last six months, he has developed hallucinations and reports seeing ghost figures, and is also becoming forgetful, on one occasion leaving the gas cooker fire on.

On examination, his mini-mental score was 10/30. He has increased tone throughout which is spastic and cogwheeling. There is a

tremor in all limbs. Cranial nerve examination reveals mild restriction of conjugate upgaze eye movement. His gait was shuffling with a tendency to fall backwards.

*What is the most likely diagnosis?*

- 1- Parkinson's disease
- 2- Pick's disease
- 3- Lewy body dementia
- 4- Huntington's disease
- 5- Motor neuron disease

Answer & Comments

Answer: 3- Lewy body dementia

The combination of progressive cognitive decline, fluctuating symptoms, visual hallucinations, extrapyramidal signs (rigidity and bradykinesia more prominent than tremor) suggest Lewy body dementia. It is progressive. Patients are at risk of falls and syncope. Symptoms and signs of Lewy body dementia probably result in part from disruption of information flow from the striatum to the neocortex, especially the frontal

lobe.

The cause is multifactorial. Altered neuromodulator and/or neurotransmitter levels (eg, acetylcholine, dopamine) influence the function of many neuronal circuits.



[ Q: 573 ] MRCPass - Neurology

A 35 year old patient presented to the hospital with generalised unsteadiness and limb weakness. There was a history of ascending weakness, beginning five days before admission. On examination, she had distal weakness with decreased reflexes in the lower limbs.

She had a lumbar puncture. The results of the CSF showed  $7 \times 10^9/L$  lymphocytes, no erythrocytes, and 1.2 g/l protein. EMGs showed reduction of mean conduction

velocity and prolonged distal latency (DL) were observed in the median, ulnar, and tibial nerves.

*What is the diagnosis?*

- 1- Multiple sclerosis
- 2- Viral meningitis
- 3- Syphilis
- 4- Trigeminal neuralgia
- 5- Guillain Barre syndrome

#### Answer & Comments

Answer: 5- Guillain Barre syndrome

Conditions such as viral meningitis and multiple sclerosis cause mild protein elevation (above 0.5g). However, Guillain Barre syndrome causes marked protein elevation, often approaching or more than 1g.M

In Guillain Barre syndrome, there is acute demyelination of the nerves, leading to reduced conduction velocities on the EMGs.



[ Q: 574 ] MRCPass - Neurology

A 43 year old man presents with frequent headaches and loss of libido. He was found to have hypopituitarism on investigation. The CT scan shows a pituitary tumour with suprasellar extension.

*Which of the Following structures is likely be compressed?*

- 1- Abducens nerve
- 2- Hypothalamus
- 3- Trochlear nerve
- 4- Optic chiasm
- 5- 3rd Ventricle

#### Answer & Comments

Answer: 4- Optic chiasm

Superior extension (suprasellar) of a pituitary tumour can lead to compression and invasion of the optic chiasm and nerve.



[ Q: 575 ] MRCPass - Neurology

A 32 year old woman has known migraine. She gets periodic episodes of headaches with associated visual symptoms.

*Which one of the Following drugs should be used first in a migraine attack?*

- 1- Ibuprofen
- 2- Methysergide
- 3- Subcutaneous sumatriptan
- 4- Oral sumatriptan
- 5- Morphine

#### Answer & Comments

Answer: 1- Ibuprofen

In acute migraine attack, the first line treatments are simple analgesics such as aspirin, ibuprofen or paracetamol.

Second line treatment in acute migraine are the triptans (e.g sumatriptan) which work by selectively stimulating 5-hydroxytryptamine 1 (5HT<sub>1</sub>) receptors.



[ Q: 576 ] MRCPass - Neurology

A 30-year-old woman has an 18 month history of unsteady gait, difficulty to speak and to perform fine movements with the fingers. She has a history of moderate alcohol intake.

Neurological examination showed scanning dysarthria, horizontal nystagmus in the lateral gaze, severe bilateral dysmetria in the upper and lower limbs, bilateral dysidiadochokinesis, severe gait ataxia and inability to maintain the sitting.

*What is the diagnosis?*

- 1- Parkinson's disease

- 2- Subacute combined degeneration
- 3- Cerebellar syndrome
- 4- Motor neuron disease
- 5- Myasthenia gravis

#### Answer & Comments

Answer: 3- Cerebellar syndrome

A mnemonic for cerebellar signs is VANISH'D - Vertigo, Ataxia, Nystagmus, Intention tremor, Scanning speech, Hypotonia and Dysdiadochokinesis.

Cerebellar syndromes are commonly due to alcohol, cerebellar space occupying lesions, multiple sclerosis, and rarely, inherited syndromes such as Friedrich's Ataxia or Spinocerebellar ataxia.



#### [ Q: 577 ] MRCPass - Neurology

A 30 year old man presents with a 5 day history of weakness in the arms and legs, accompanied by tingling. He had several episodes of bloody diarrhoea illness two weeks ago.

On examination there was leg and arm weakness and flaccid deep tendon reflexes.

*Which test would best help confirm the diagnosis?*

- 1- EMG
- 2- EEG
- 3- MRI
- 4- HIV serology
- 5- Anti Ach antibody

#### Answer & Comments

Answer: 1- EMG

The diagnosis is likely to be Guillain Barre syndrome. The two best tests are EMG (shows acute demyelination changes) and CSF (raised protein). Campylobacter serology should also be sent for this patient.



#### [ Q: 578 ] MRCPass - Neurology

A 70 year old man who had multiple episodes of unilateral amaurosis fugax. He has risk factors of being a smoker and hypertension. He is on atenolol and aspirin.

An ECG shows atrial fibrillation. Carotid dopplers show 80% right carotid stenosis.

*What is the most appropriate management?*

- 1- Warfarin
- 2- Carotidendarterectomy, then warfarinise
- 3- Clopidogrel
- 4- High dose aspirin 300mg with a proton pump inhibitor
- 5- Tight hypertensive control

#### Answer & Comments

Answer: 2- Carotidendarterectomy, then warfarinise

As there is > 70% carotid artery stenosis and symptoms suggestive of emboli, endarterectomy is recommended. The patient should also be anticoagulated afterwards in view of atrial fibrillation.



#### [ Q: 579 ] MRCPass - Neurology

A 50 year old man has a history of hypertension and is a smoker. He complains of visual loss. Assessment shows the presence of a right homonymous hemianopia.

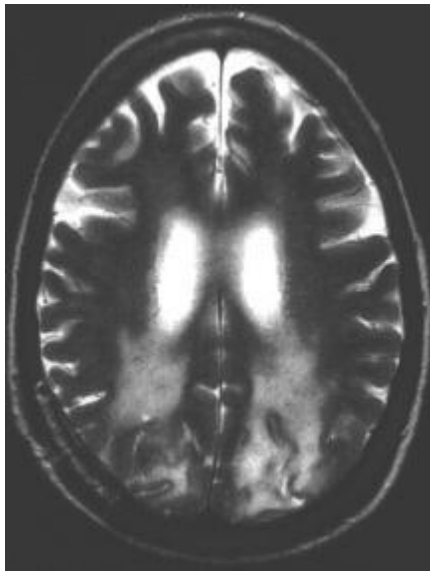
*Which structure is damaged?*

- 1- Optic chiasm
- 2- Optic radiation
- 3- Left occipital lobe
- 4- Right occipital lobe
- 5- Temporal lobe

#### Answer & Comments

Answer: 3- Left occipital lobe

In homonymous hemianopia, the contralateral occipital lobe is affected (usually infarct).



Left occipital infarct on MRI



[ Q: 580 ] MRCPass - Neurology

A 66 year old man has had longstanding tremors in both his hands and forearms. Examination reveals normal tone, power and reflexes in his arms. The tremors improve when he drinks alcohol.

*What is the diagnosis?*

- 1- Parkinson's disease
- 2- Motor neuron disease
- 3- Benign essential tremor
- 4- Prion infection
- 5- Hemiballismus

Answer & Comments

Answer: 3- Benign essential tremor

The Following features support a diagnosis of Essential Tremor:

- (1) bilateral action tremor of the hands and forearms
- (2) absence of other neurological signs, except the cogwheel phenomenon

(3) may have isolated head tremor with no signs of dystonia

Secondary criteria include a long disease duration (more than three years), a positive family history and beneficial response to alcohol (not anticholinergics).



[ Q: 581 ] MRCPass - Neurology

A 45 year old man has difficulty getting out of the chair.

On examination, he has proximal muscle weakness.

Investigations show :

Hb 12.5 g/dl

MCV 79 fl

WCC  $7 \times 10^9/L$

platelets  $220 \times 10^9/L$

urea 6 mmol/l

creatinine 110  $\mu\text{mol/l}$

Creatine Kinase 7,000 (24-170) U/l

*What investigation should be done next?*

- 1- Lumbar puncture
- 2- CT brain
- 3- MRI brain
- 4- Muscle biopsy
- 5- Tensilon test

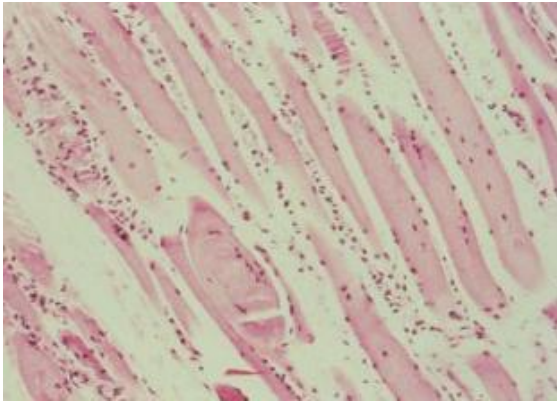
Answer & Comments

Answer: 4- Muscle biopsy

The clinical features are consistent with dermatomyositis or polymyositis.

A suitable area should be identified by electromyography for muscle biopsy. Muscle biopsy shows muscle necrosis, phagocytosis of muscle fibres, and an inflammatory infiltrate.





Polymyositis - Inflammatory infiltrates in a muscle biopsy



[ Q: 582 ] MRCPass - Neurology

A 50 year old lady complains of gradual onset of blurred vision in her left eye. Examination reveals a left sided relative afferent pupillary defect. Fundoscopy reveals left sided optic atrophy. Visual fields show a left sided central scotoma and an upper quadrantic visual field defect in the right eye.

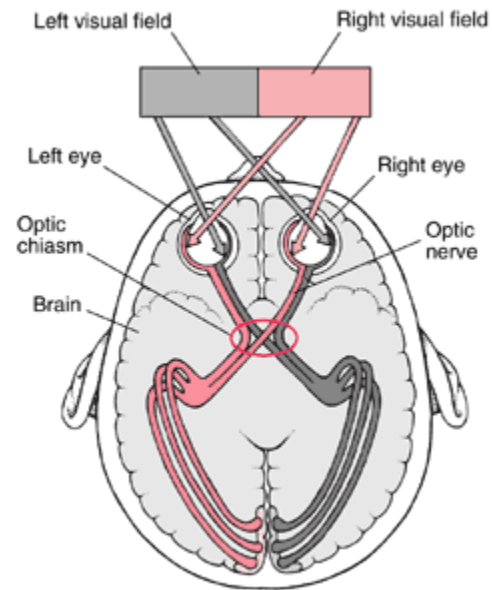
*Where is the lesion?*

- 1- Left optic nerve
- 2- Left anterior optic chiasm
- 3- Sphenoid wing
- 4- Left occipital area
- 5- Left optic radiation

#### Answer & Comments

**Answer:** 2- Left anterior optic chiasm

Lesions of the anterior chiasm (junction of optic nerve and chiasm) will produce an ipsilateral central scotoma and a contralateral superior quadrantanopia. The contralateral defect is due to interruption of the crossing nasal fibres.



Optic Tract



[ Q: 583 ] MRCPass - Neurology

A 40 year old patient has been having fevers, neck stiffness and confusion. There was a past medical history of HIV infection and diabetes.

A CT scan was normal and lumbar puncture was performed. The opening pressure during LP was normal, and there were elevated CSF lymphocytes (88), and elevated CSF protein (5.5 g/l), and a low glucose. Gram staining and India ink preparation revealed 4-7 µm, round budding yeasts with capsule and 8-10 lymphocytes per high power field.

*What is the diagnosis?*

- 1- Mumps meningitis
- 2- Mycobacterium tuberculosis
- 3- Cryptococcal meningitis
- 4- Carcinomatous meningitis
- 5- Meningococcal meningitis

#### Answer & Comments

**Answer:** 3- Cryptococcal meningitis

Cryptococcal meningitis is often seen in immunosuppressed patients. The organism is

Cryptococcus Neoformans. Meningitis manifests with diffuse, nonfocal findings (eg, altered mental status, vomiting).

A CT scan or MRI in patients with cryptococcal infection may reveal diffuse atrophy or cerebral edema with focal, homogenous, or contrast-enhanced areas.

An India ink preparation is commonly used with CSF to identify the organism and to support a presumptive diagnosis. If performed correctly, 25-50% of patients with cryptococcal meningitis show cryptococci.

In patients with AIDS, amphotericin B is given for 2 weeks, with or without 2 weeks of flucytosine, followed by fluconazole at 400 mg/d for a minimum of 10 weeks.



[ Q: 584 ] MRCPass - Neurology

A young lady visits her neurologist complaining of episodes of generalised weakness after arguments with her partner. She also complains of seeing goblins upon waking up. At work as a secretary, she has difficulty staying awake and may have sleep attacks.

*What is the likely diagnosis?*

- 1- Narcolepsy
- 2- Generalised epilepsy
- 3- Petit mal seizures
- 4- Obstructive sleep apnoea
- 5- Jacksonian seizures

Answer & Comments

Answer: 1- Narcolepsy

The condition described is narcolepsy. The episodes described are likely to be cataplexy.

The HLA association is DQB1, Clomipramine is a tricyclic antidepressant which may help, there is early REM sleep and hypnagogic hallucinations occur.



[ Q: 585 ] MRCPass - Neurology

A 68 year old woman has neck pains and occipital headaches for 2 years. She is referred to the neurology outpatients for assessment. Investigations showed a normal CT of the brain. Cervical X ray showed degenerative changes of narrow ed disc spaces and loss of cervical lordosis.

*What is the likely diagnosis?*

- 1- Cerebellar haemorrhage
- 2- Temporal arteritis
- 3- Occipital neuralgia
- 4- Epidural haemorrhage
- 5- Cervical spondylosis

Answer & Comments

Answer: 5- Cervical spondylosis

In cervical spondylosis, several overlapping syndromes are seen: neck and shoulder pain, suboccipital pain and headache, radicular symptoms, and cervical spondylotic myelopathy.

Examination findings include neck pain, radicular signs, and myelopathic signs. Cervical spine films can demonstrate disk space narrowing, osteophytosis, loss of cervical lordosis, uncovertebral joint hypertrophy, apophyseal joint osteoarthritis, and vertebral canal diameter.



[ Q: 586 ] MRCPass - Neurology

A 45 year old woman is referred to you for investigation of headache. She has had headaches for 10 years.

Initially it responded to proprietary painkillers, but she is currently using the maximum dose of paracetamol, tramadol and diclofenac. The headaches are frequent throughout the day and last for hours. There are no associated visual symptoms.

*Which is the next best management step?*

- 1- Iv aspirin
- 2- Caffeine
- 3- Withdrawal of analgesics
- 4- Pizotifen
- 5- Sumatriptan

#### Answer & Comments

**Answer:** 3- Withdrawal of analgesics

The history of chronic use of analgesics and nature of headaches suggests analgesic induced headache. In some patients the headaches will improve.



#### [ Q: 587 ] MRCPass - Neurology

A patient is undergoing examination of the eye. The patient has a direct response to light shone in the right eye, but no consensual response. Light shone in the left eye elicits a consensual response, but not a direct response.

During pursuit eye movements, the left eye is fixed in an inferior and lateral position.

*Where is the lesion?*

- 1- Right trochlear nerve
- 2- Left optic nerve
- 3- Left oculomotor nerve
- 4- Right abducent nerve
- 5- Left trochlear nerve

#### Answer & Comments

**Answer:** 3- Left oculomotor nerve

A left third nerve palsy will cause a dilated left pupil, with the eye in a 'down and out' position. The afferent pathway is controlled by the optic nerve and the efferent pathway by the oculomotor nerve - hence a dilated poorly reacting pupil.



Left Third Nerve Palsy



#### [ Q: 588 ] MRCPass - Neurology

A 18 year old male is wheelchair bound and has difficulty with respiration. He also has upper limb weakness.

When he was younger he developed marked hypertrophy of his muscles. Blood tests reveal a raised creatine kinase.

*What is a muscle biopsy likely to show?*

- 1- Necrotic muscle fibres
- 2- Absence of dystrophin
- 3- Excessive lipid storage
- 4- Macrophage infiltration
- 5- Vasculitic changes

#### Answer & Comments

**Answer:** 2- Absence of dystrophin

Mutation in the dystrophin gene causes deficiency of dystrophin in Duchenne's muscular dystrophy. Patients develop progressive upper and lower limb weakness with pseudohypertrophy of calves and quadriceps.



#### [ Q: 589 ] MRCPass - Neurology

A 30 year old lady is found to have a left sided posterior communicating artery aneurysm on cerebral angiography.

*Which of the Following would you expect to find?*

- 1- Facial nerve palsy
- 2- Left pupillary constriction
- 3- Sensory loss to the left side of the face

- 4- Downgaze palsy  
5- Third nerve palsy

### Answer & Comments

Answer: 5- Third nerve palsy

A posterior communicating artery aneurysm will cause compression of the third nerve, and therefore pupillary involvement from compression of the parasympathetic fibres that run on the outside of the third nerve. This leads to a dilated pupil. Other features of a third nerve palsy include ptosis, and a 'down and out' eye. Upgaze and adduction is affected.



### [ Q: 590 ] MRCPass - Neurology

A 35 year old teacher has a right sided headache and blurring of her vision in the right eye. She has previously had an episode of optic neuritis 3 years beforehand, in the right eye. On examination, there was a right afferent pupillary defect and pale optic disc. There was weakness of the facial muscles on the right. Tone and reflexes were brisk on the right with power of 3/5 in the arm and the leg. She was afebrile.

MRI of the brain reveals a 4 cm left temporo-parietal mass, which was incompletely ring enhancing. There were also two small white matter lesions also visible in the frontal area.

*What is the most likely diagnosis?*

- 1- Cerebral lymphoma
- 2- Multiple sclerosis
- 3- Acute demyelinating encephalomyelitis
- 4- Lyme disease
- 5- Sarcoidosis

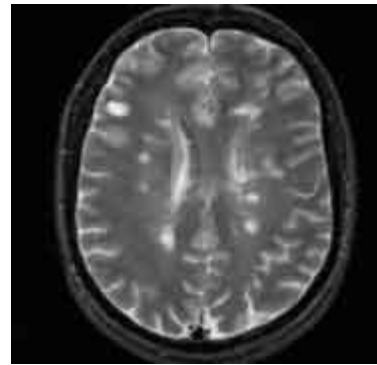
### Answer & Comments

Answer: 2- Multiple sclerosis

The episodes of optic neuritis are suggestive of MS. In view of the appearance of the lesion

on MRI in association with white matter changes, the most likely cause would be a demyelinating lesion.

Large lesions such as these can cause weakness or cranial nerve defects.



White matter lesions on MRI seen in multiple sclerosis



### [ Q: 591 ] MRCPass - Neurology

A 75 year old man has dysphasia and left sided arm weakness. He is known to have hypertension, asthma and rheumatoid arthritis. In addition he suffered from cluster headaches. He smokes 20 cigarettes a day.

On examination, he has some weakness of the left hand. Visual fields, speech and sensation are normal. Blood pressure is 190/90 mmHg.

*Which of the Following is most likely?*

- 1- Partial posterior circulation infarct
- 2- Right hemisphere lacunar infarct
- 3- Right pontine haemorrhage
- 4- Total anterior circulation infarct
- 5- Vertebrobasilar insufficiency

### Answer & Comments

Answer: 2- Right hemisphere lacunar infarct

The history suggests the dysarthria-clumsy hand syndrome, one of the classic lacunar syndromes that are strokes in the subcortical regions (or brain stem) secondary to small vessel disease. The usual site of damage in the

dysarthria-clumsy hand syndrome is the internal capsule or pons.



[ Q: 592 ] MRCPass - Neurology

A 65 year old lady presents to the hospital with an ataxic gait. On examination, the patient had difficulty standing without assistance and minor movements of her head and body caused vertigo. There was mild postural tremor and marked hypotonia of the right limbs, mostly the arm.

Finger to nose testing elicited marked intention tremor and disdiadochokinesis in the right arm. Speech was dysarthric but comprehension was good.

*Where is the lesion likely to be?*

- 1- Right pons
- 2- Left medulla
- 3- Right cerebellar hemisphere
- 4- Corpus callosum
- 5- Right basal ganglia

Answer & Comments

Answer: 3- Right cerebellar hemisphere

Lesions of the cerebellum (intention tremor, disdiadochokinesis) lead to motor signs ipsilateral to the lesion.



[ Q: 593 ] MRCPass - Neurology

A 25 year old man is known to have epilepsy. He had a generalized tonic clonic seizures for 15 minutes.

*What drug should be given?*

- 1- IV phenytoin
- 2- IV sodium valproate
- 3- IV gabapentin
- 4- IV lamotrigine
- 5- IV lorazepam

Answer & Comments

Answer: 5- IV lorazepam

Current consensus is that a benzodiazepine, notably lorazepam (Ativan), is the initial class of drug for the treatment of status epilepticus. A phenytoin, phenytoin sodium or fosphenytoin is the next drug to be administered.



[ Q: 594 ] MRCPass - Neurology

A 28 year old woman is 30 weeks pregnant. She complains of a sudden onset generalised headache.

On examination, she has pupils are which reactive bilaterally and there is a right sided third nerve palsy.

*Which test is most appropriate?*

- 1- MRA
- 2- MRV
- 3- MRI
- 4- CT head
- 5- Lumbar puncture

Answer & Comments

Answer: 2- MRV

A headache in a pregnant patient, with associated cranial nerve palsy suggests cerebral venous sinus thrombosis. Treatment is with intravenous or low molecular weight heparin.



[ Q: 595 ] MRCPass - Neurology

A 45 year old man has severe episodes of dizziness with associated vomiting and pain in the right ear. This occurs once or twice a week. During these attacks he feels the surrounding environment spinning around. He also mentions a high pitched sound frequently being present.



On examination, during an attack, he has right horizontal nystagmus. Audiological testing reveals right-sided sensorineural deafness.

*What is the diagnosis?*

- 1- Vestibular nystagmus
- 2- Meniere's disease
- 3- Benign paroxysmal positional vertigo
- 4- Acoustic neuroma
- 5- Cerebellopontine angle tumour

#### Answer & Comments

Answer: 2- Meniere's disease

Meniere's disease is caused by distension of the endolymphatic compartment of the inner ear. The symptoms of Meniere's disease include vertigo, hearing loss and tinnitus. The dizziness is described as a spinning or whirling feeling and may cause problems with balance. Some people feel nauseated and vomit during an attack. Tinnitus refers to a ringing or roaring sound in the ear. Others may notice some hearing loss, especially with sounds that have a low frequency.

Horizontal nystagmus is more commonly seen on examination, but vertical nystagmus may also occur.



[ Q: 596 ] MRCPass - Neurology

A 30 year old gymnast has sudden onset vertigo and dizziness. On examination, there is horizontal nystagmus, with a full range of eye movements. Her speech is slurred. There is intention tremor and disidiadochokinesis which is asymmetrical. She has an ataxic gait.

*Which of the Following investigations would be most appropriate?*

- 1- CT of the head
- 2- MRI and MRA of head and neck
- 3- MRI with enhancement
- 4- Lumbar puncture

#### 5- Otological testing

#### Answer & Comments

Answer: 2- MRI and MRA of head and neck

The clinical picture is of an acute onset cerebellar syndrome, which suggest a vascular cause. This would involve the posterior (vertebrobasilar) circulation. If headache or neck pain were associated, a vertebral artery dissection would be most important to exclude. A Magnetic Resonance Angiography (MRA) will help to diagnose dissection, stenosis or thrombosis.



[ Q: 597 ] MRCPass - Neurology

A 30 year old gym instructor complained of shoulder pain and weakness which has been progressive over the past 5 years. He is upset about having difficulty lifting weights which he had previously been able to do so without difficulty.

On examination, there was winging of the scapula. Power was reduced in the muscles around the shoulder, with bilateral wasting. He also has some facial difficulty raising his eyebrows. His serum CK is 400.

*What is the likely diagnosis?*

- 1- Duchenne's muscular dystrophy
- 2- Becker's muscular dystrophy
- 3- Myotonic dystrophy
- 4- Fascioscapulo humeral dystrophy
- 5- Polymyalgia rheumatica

#### Answer & Comments

Answer: 4- Fascioscapulo humeral dystrophy

Facioscapulohumeral dystrophy (FSHD) is one of the most common types of muscular dystrophy. It is of autosomal dominant inheritance. Onset is usually age 20 years.



Initial weakness is seen in facial muscles, starting in the orbicularis oculi, orbicularis oris, and zygomaticus.

Shoulder weakness is the presenting symptom in more than 82% of patients. Winging of the scapula is the most characteristic sign. Creatine kinase levels are raised. The drug Albuterol which relaxes bronchial smooth muscle has been shown to increase lean muscle mass when used over a period of months.



Winging of the scapula in FSHD



[ Q: 598 ] MRCPass - Neurology

A 40 year old man presented with double vision and was found to have normal vertical eye movements.

On left lateral gaze, there was absence of adduction of the right eye, and nystagmus in the abducting left eye.

*This eye movement disorder can be explained by a lesion in the:*

- 1- Left cerebellopontine angle
- 2- Right parietal area
- 3- Right medial longitudinal fasciculus
- 4- Left medial longitudinal fasciculus
- 5- Left lateral medulla

Answer & Comments

Answer: 3- Right medial longitudinal fasciculus

The diagnosis is right internuclear ophthalmoplegia due to a lesion in the right medial longitudinal fasciculus. The likely underlying pathology is multiple sclerosis, other causes of INO include a glioma or vascular lesion.



[ Q: 599 ] MRCPass - Neurology

A 70 year old man presents with a history of falls. He has difficulty reading and walking down stairs. He has dysarthria, akinesia and rigidity. Power of the muscles is normal, reflexes are brisk.

*What physical sign will help to confirm the diagnosis?*

- 1- Gait
- 2- Eye movements
- 3- Romberg's sign
- 4- Abdominal reflexes
- 5- Plantar reflexes

Answer & Comments

Answer: 2- Eye movements

The patient has progressive supranuclear palsy - parkinsonian features and gaze palsy. Demonstration of impairment of voluntary gaze will help confirm the diagnosis.



[ Q: 600 ] MRCPass - Neurology

A 55 year old man has slowly progressive weakness of his upper limbs. On examination of the patient the physical signs are wasting and weakness of the small muscles of the hand, flattening of the muscles of the ulnar border of the forearm.

The upper limb reflexes are absent. Pain and temperature sensation are reduced over the upper limbs and upper chest whereas light touch and proprioception remain intact. Lower limb reflexes are exaggerated and plantars are extensor.

*What is the likely diagnosis?*

- 1- Normal pressure hydrocephalus
- 2- Multiple sclerosis
- 3- Arnold Chiari malformation
- 4- Severe kyphoscoliosis
- 5- Kennedy's syndrome

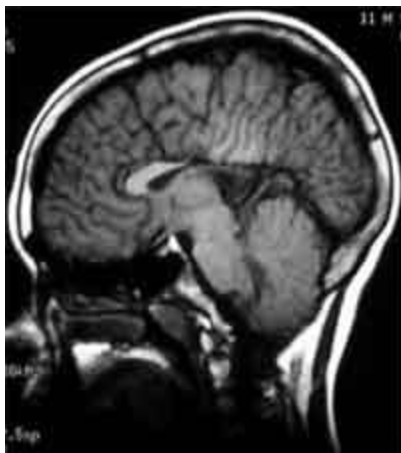
#### Answer & Comments

**Answer:** 3- Arnold Chiari malformation

Arnold-Chiari Malformation is a condition in which the cerebellum portion of the brain protrudes into the spinal canal. It may or may not be apparent at birth.

Arnold-Chiari I type malformation usually causes symptoms in young adults and is often associated with syringomyelia, in which a tubular cavity develops within the spinal cord.

Arnold-Chiari II type malformation is associated with myelomeningocele (a defect of the spine) and hydrocephalus (increased cerebrospinal fluid and pressure within the brain), which usually are apparent at birth. The patient described has the features of an intramedullary lesion of the spinal cord.



Chiari Malformation



[ Q: 601 ] MRCPass - Neurology

A 30 year old woman has been diagnosed with a cerebellar cyst with MRI scanning. She is also known to have polycystic

kidney disease. There is a family history of the condition.

*What is the likely diagnosis?*

- 1- Pheochromocytoma
- 2- Von Hippel Lindau syndrome
- 3- Hereditary haemorrhagic telangiectasia
- 4- Multiple sclerosis
- 5- Friedreich's ataxia

#### Answer & Comments

**Answer:** 2- Von Hippel Lindau syndrome

The diagnosis is likely to be von Hippel Lindau disease. There may be cerebellar haemangioblastomas, retinal angiomas and polycystic liver or kidneys. Ectopic erythropoietin secretion by the haemangioblastomas cause polycythaemia.



Retinal Angioma seen in von Hippel Lindau syndrome



[ Q: 602 ] MRCPass - Neurology

An 80 year old man is admitted with confusion over the last 3 days. He has a past medical history of hypertension and has had frequent falls in the past. Clinical examination is unremarkable.

*Which of these conditions needs to be excluded?*

- 1- Intracranial haemorrhage
- 2- Subdural haematoma
- 3- Meningitis

- 4- Vertebrobasilar stroke
- 5- Encephalitis

#### Answer & Comments

**Answer:** 2- Subdural haematoma

A patient who has had a fall may have hit his head and developed a subdural haematoma. This can be excluded by a CT head scan.



Right sided subdural haematoma



#### [ Q: 603 ] MRCPass - Neurology

A 45 year old man presents with a sudden onset of headache in the posterior region, associated with vomiting.

Neurological examination, including fundoscopy is unremarkable apart from slightly brisk reflexes. There is no neck stiffness or photophobia.

*Which of the Following management options would be the most appropriate?*

- 1- CT of the head and lumbar puncture
- 2- MRI of the head
- 3- CT of the head
- 4- Skull X ray
- 5- Discharge from hospital

#### Answer & Comments

**Answer:** 1- CT of the head and lumbar puncture

A subarachnoid haemorrhage (SAH) needs to be excluded. CT brain scan is normal in a third of patients with SAH. A lumbar puncture to look for xanthochromia in the CSF should then be performed.



#### [ Q: 604 ] MRCPass - Neurology

A 40 year old patient has presented with a generalised tonic clonic seizure for the first time. This lasted for 10 minutes.

*What advice should be given regarding driving a car?*

- 1- No driving for 1 month
- 2- No driving for 6 months
- 3- No driving for 1 year
- 4- Driving is allowed if EEG is normal
- 5- Driving is allowed if CT scan is normal

#### Answer & Comments

**Answer:** 3- No driving for 1 year

For a single seizure, driving is not permitted for 1 year. Also, a medical review is required before one is to do so and it is a requirement for the patient to inform the Driver and Vehicle Licensing Authority.



#### [ Q: 605 ] MRCPass - Neurology

The sister of a patient who died from a subarachnoid hemorrhage due to a cerebral aneurysm is worried and is asking about her chances of having the same problem. She mentions that there family history of other deaths from subarachnoid haemorrhage. She is how ever, asymptomatic.

*What should be done?*

- 1- Reassure and nothing else
- 2- CT scan of head
- 3- MRI head scan
- 4- Cerebral angiography
- 5- Lumbar puncture

## Answer &amp; Comments

Answer: 3- MRI head scan

This may be a case of familial subarachnoid haemorrhage. In those who have a first degree relative who genuinely suffered a SAH, their risk of also suffering one is 3-7 times that of the general population. MRI is better than CT scan for screening. Angiography is diagnostic but too invasive for screening.



## [ Q: 606 ] MRCPass - Neurology

A 45 year old lady has a 4 week history of pain and difficulty seeing out of her right eye. She has a visual acuity of 6/18 in the right and 6/6 in the left. There is also a right afferent pupillary defect.

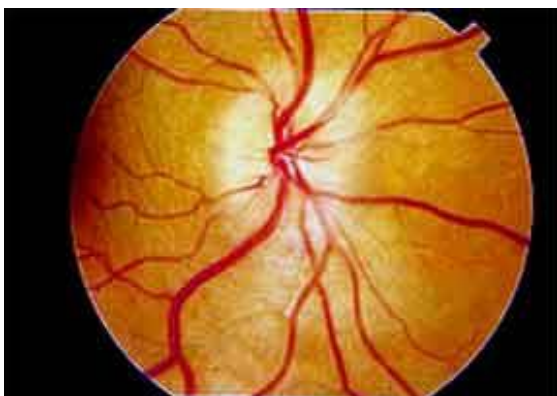
*Which is the most likely cause from the list below?*

- 1- Thyroid eye disease
- 2- Diabetic retinopathy
- 3- Astrocytoma
- 4- Multiple sclerosis
- 5- Retinitis pigmentosa

## Answer &amp; Comments

Answer: 4- Multiple sclerosis

Optic neuritis secondary to multiple sclerosis can present in this manner.



Disc pallor (optic neuritis)



## [ Q: 607 ] MRCPass - Neurology

A 40 year old lady presents with drooping of her eye lids and double vision. She does not have proptosis. There is no muscle wasting around the face. She has diplopia on downgaze during examination and also proximal muscle weakness of her upper limbs. Myasthenia gravis is diagnosed.

*Which drug is most likely to improve her symptoms?*

- 1- Beta interferon
- 2- Intravenous immunoglobulin
- 3- Benztropine
- 4- Pyridostigmine
- 5- Bromocriptine

## Answer &amp; Comments

Answer: 4- Pyridostigmine

The condition described is Myasthenia Gravis rather than Grave's eye disease or Myotonic dystrophy (frontal balding). Pyridostigmine is an anticholinesterase which reduces acetylcholine breakdown and hence improve symptoms of fatiguability in myasthenia gravis.



## [ Q: 608 ] MRCPass - Neurology

A 40 year old bank clerk presents with a headache, nausea and ptosis of the left eye with blurred vision. She does not have fatiguability of her eye movements. Examination revealed swelling on the left side of face, proptosis and chemosis of the left eye, left mastoid swelling and left ophthalmoplegia involving cranial nerves.

The pupil sizes were equal. A CT of her head is normal.

*What is the likely diagnosis?*

- 1- Third nerve palsy
- 2- Myasthenia gravis
- 3- Pituitary tumour

- 4- Cavernous sinus thrombosis  
5- Horner's syndrome

#### Answer & Comments

**Answer:** 4- Cavernous sinus thrombosis

A history of headache and no other obvious cause of ptosis is suggestive of cavernous sinus thrombosis. Third nerve palsy is associated with dilated pupil and Horner's syndrome is associated with miosis. A CT can be normal, and diagnosis is confirmed with MRI.



#### [ Q: 609 ] MRCPass - Neurology

A 65 year old man presents with an episode of amnesia for the second time. 2 days ago he had an episode of confusion, according to his wife. He was, however, able to have a normal conversation despite having been found wandering. After 2 hours, he abruptly returned to normal and could not remember what happened.

*What is the most likely diagnosis?*

- 1- Alcoholic encephalopathy  
2- Subarachnoid haemorrhage  
3- Complex partial seizure  
4- Transient ischaemic attack  
5- Transient global amnesia

#### Answer & Comments

**Answer:** 5- Transient global amnesia

Transient global amnesia (TGA) is a temporary and isolated disorder of memory which may last several hours. Heavy exercise and the cold are known precipitants.



#### [ Q: 610 ] MRCPass - Neurology

A 40 year old man presents with finger weakness which was diagnosed as an ulnar nerve lesion.

*Which of the following muscles is supplied by the ulnar nerve?*

- 1- Interossei  
2- Lateral two lumbricals  
3- Opponens pollicis  
4- Abductor pollicis brevis  
5- Flexor pollicis brevis

#### Answer & Comments

**Answer:** 1- Interossei

The interossei muscles and medial two lumbricals are supplied by the ulnar nerve. The lateral two lumbricals (anatomical position), opponens pollicis, abductor pollicis brevis and flexor pollicis brevis are supplied by the median nerve.



#### [ Q: 611 ] MRCPass - Neurology

A 35 year old alcoholic presents with unsteadiness whilst walking. On examination he has increased tone and brisk reflexes in the right leg. Proprioception is abnormal in the right leg. There is loss of vibration sense in the right leg. There is decrease in pain and temperature sensation in the left leg.

*Which one of the following conditions is most likely to be responsible for his weakness?*

- 1- Syringomyelia  
2- Subacute combined degeneration of cord  
3- Friedrich's ataxia  
4- Guillain Barre syndrome  
5- Brown Sequard syndrome

#### Answer & Comments

**Answer:** 5- Brown Sequard syndrome

Brown Sequard syndrome which describes hemisection of the spinal cord, causes ipsilateral UMN signs and proprioception loss (corticospinal tract and dorsal column decussate at the medulla), and contralateral



sensory loss in pain and temperature (the spinothalamic tracts decussate at the same level). The rest of the conditions (syringomyelia, subacute degeneration of cord, Friedrich's ataxia) can cause cerebellar signs or patchy sensory loss but should be bilateral.



[ Q: 612 ] MRCPass - Neurology

A 45 year old man has bilateral ptosis. He mentions a past history of cataracts, frontal balding and weakness of the facial muscles. On examination, he has a firm grip with difficulty relaxing.

*What is the diagnosis?*

- 1- Multiple sclerosis
- 2- Motor neuron disease
- 3- Parkinson's disease
- 4- Dermatomyositis
- 5- Myotonic dystrophy

Answer & Comments

Answer: 5- Myotonic dystrophy

Myotonic dystrophy is autosomal dominant. It is a trinucleotide repeat disorder which exhibits anticipation (worse with successive generations). Associated features are cataracts, diabetes, testicular atrophy and cardiac conduction abnormalities.



Myotonic Dystrophy



[ Q: 613 ] MRCPass - Neurology

A 50 year old alcoholic is admitted to A+E with unsteadiness and confusion. BM is 7.

*Which is the most appropriate treatment?*

- 1- Glucose
- 2- Lorazepam
- 3- IV thiamine
- 4- IV Vitamin B<sub>12</sub>
- 5- IV vitamin K

Answer & Comments

Answer: 3- IV thiamine

This patient is likely to have Wernicke's encephalopathy causing confusion. IV thiamine should be given to reduce the progression. This is contained in Pabrinex.



[ Q: 614 ] MRCPass - Neurology

A man presents with generalised weakness. On examination, fatigability was demonstrated. A diagnosis of Eaton Lambert syndrome was made.

*What form of antibody is found in this condition?*

- 1- Anti Purkinje
- 2- Anticholinesterase
- 3- Neuromuscular junction
- 4- Potassium channels
- 5- Voltage gated calcium channels

Answer & Comments

Answer: 5- Voltage gated calcium channels

Eaton Lambert syndrome is frequently associated with a malignancy e.g. bronchial. The disorder is associated with antibodies against voltage gated calcium channels.



[ Q: 615 ] MRCPass - Neurology

A 20 year old man injured himself whilst snow boarding. On examination, he has weakness of elbow flexion and loss of



sensation over the radial aspect of her forearm.

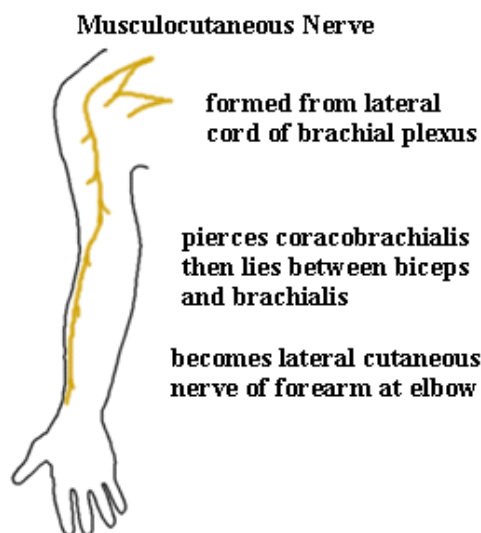
*Which of the Following nerves is damaged?*

- 1- Musculocutaneous nerve
- 2- Brachioradialis nerve
- 3- Radial nerve
- 4- Median nerve
- 5- Ulnar nerve

#### Answer & Comments

**Answer:** 1- Musculocutaneous nerve

The fibers of the musculocutaneous nerve originate in the lower cervical spinal cord (usually C5 to C7), travel via the lateral cord of the brachial plexus, and supply sensory and motor innervation to the upper arm, elbow, and forearm. It supplies the biceps which controls elbow flexion. Sensation is to the lateral area (lateral cutaneous nerve) of the forearm.



[ Q: 616 ] MRCPass - Neurology

An 18 year old woman is referred to the GP by her teacher. The teacher was concerned about frequent episodes of day dreaming during class and poor examination results over the past year.

*Which one of the Following needs to be excluded?*

- 1- Vaso vasagal syncope
- 2- Pseudoseizure
- 3- Anxiety disorder
- 4- Visual hallucinations
- 5- Absence seizures

#### Answer & Comments

**Answer:** 5- Absence seizures

Daydreaming in children can be easily confused with absence or complex partial seizures, in which staring is a prominent and common feature. However, lip smacking, eye blinking, or stiffening of muscle groups is common during seizures but not during daydreaming.



[ Q: 617 ] MRCPass - Neurology

A 20 year old man presents with a 6 month history of depression and painful sensory disturbance in both legs. He has also become very confused. There are myoclonic jerks observed in his legs. His MRI scan reveals thalamic hyperintensity and EEG is normal.

*The most likely diagnosis is:*

- 1- New variant CJD
- 2- Huntington's disease
- 3- Wilson's disease
- 4- Progressive multifocal leucoencephalopathy
- 5- Paraneoplastic syndrome

#### Answer & Comments

**Answer:** 1- New variant CJD

New variant CJD commonly presents in young adults painful sensory symptoms in the lower limbs and also psychiatric symptoms. Cognitive impairment, pyramidal signs, myoclonus and primitive reflexes then develop.

MRI commonly shows high signal on T2-weighted images in the pulvinar (posterior aspect of thalamus). EEG is often normal, unlike sporadic CJD, in which triphasic waves are observed.



[ Q: 618 ] MRCPass - Neurology

A 60 year old woman is admitted with a severe headache. CT scan confirms a subarachnoid haemorrhage. She initially makes satisfactory progress but 7 days later her level of consciousness begins to deteriorate.

*The most likely cause of the deterioration is:*

- 1- Cerebral oedema
- 2- Coning of the medulla
- 3- Meningitis
- 4- Encephalitis
- 5- Acute hydrocephalus

Answer & Comments

Answer: 5- Acute hydrocephalus

Organised blood in the subarachnoid space may cause obstruction to the flow of cerebrospinal fluid (impaired absorption in the arachnoid villi). 10% of patients will require CSF diversion or shunting.



[ Q: 619 ] MRCPass - Neurology

A 62 year old woman has several episodes of dizziness particularly when she turns her head. 2 months ago, she had an attack of vertigo, without deafness or tinnitus, lasting for a few minutes. Over the last month, she had five further attacks of vertigo, accompanied by moderate headache and a left homonymous hemianopia, lasting for about a quarter of an hour. After the last episode she developed persistent unsteadiness of gait, and was admitted to hospital.

On examination there was normal visual fields. were full. There was rhythmic horizontal nystagmus, slight weakness of the right external rectus muscle without diplopia, and ataxia of gait, provoked by turning. The bloodpressure was 160/80 mmHg.

*What is the diagnosis?*

- 1- Parietal lobe CVA
- 2- Frontal lobe CVA
- 3- Vertebrobasilar insufficiency
- 4- Syringomyelia
- 5- Brown sequard syndrome

Answer & Comments

Answer: 3- Vertebrobasilar insufficiency

Vertebrobasilar (posterior) circulation constitutes the arterial supply to the brain stem, cerebellum, and occipital cortex. Bilateral visual loss, dizziness, speech disturbances, drop attacks and transient global amnesia are features of vertebrobasilar insufficiency. MRI / MRA are good investigations to investigate for vertebral or basilar arterial disease.



[ Q: 620 ] MRCPass - Neurology

A 55 year old man has developed weakness over the past 3 weeks which has affected his walking. He has no significant past medical history. On examination, he had decreased sensation peripherally in the legs and also flaccid reflexes in the ankles. A CT of the head was normal and lumbar puncture was done.

Results were:

protein 0.75 (<0.43 g/l)  
glucose 4 (3.3 to 4.4 mmol/l)  
lymphocytes 7 (< 5/mm<sup>3</sup>)

*What is the likely diagnosis?*

- 1- Multiple sclerosis
- 2- Guillain Barre syndrome

- 3- Lymphocytic meningitis
- 4- Tuberculous meningitis
- 5- Syringomyelia

#### Answer & Comments

**Answer:** 2- Guillain Barre syndrome

In Guillain Barre syndrome, CSF protein is elevated in most patients after the second or third week of illness. The gamma globulin fraction is usually raised. Cells, usually monocytic, are found in 20% of cases.



#### [ Q: 621 ] MRCPass - Neurology

A 65 year old patient has progressive dementia. His wife mentions that he has urinary incontinence and an ataxic gait.

*What is his CT scan likely to show ?*

- 1- Parasagittal mass
- 2- Multiple infarcts
- 3- Large ventricles
- 4- Cerebellar tumour
- 5- Berry aneurysm

#### Answer & Comments

**Answer:** 3- Large ventricles

The diagnosis is normal pressure hydrocephalus. Dementia, urinary incontinence and unsteady gait are seen. Typically there is no papilloedema. There are large ventricles caused by communicating hydrocephalus. Ventricular shunting may help improve the symptoms.



Normal Pressure Hydrocephalus



#### [ Q: 622 ] MRCPass - Neurology

A 60 year old lady presents with acute onset unsteadiness and dizziness. Neurological examination shows a right-sided Horner's syndrome and nystagmus. There is also loss of pain and temperature sensation on the left side of the trunk and in the left arm and leg. Her gait is ataxic.

*Which is the correct diagnosis?*

- 1- Posterior inferior cerebellar artery occlusion
- 2- Medullary infarct
- 3- Posterior cerebral artery occlusion
- 4- Middle cerebral artery occlusion
- 5- Posterior communicating artery haemorrhage

#### Answer & Comments

**Answer:** 1- Posterior inferior cerebellar artery occlusion

There are a complex of symptoms caused by occlusion of the posterior inferior cerebellar artery or one of its branches supplying the lower portion of the brain stem, resulting in sensory and sympathetic disturbances, cerebellar and pyramidal tract signs, and evidence of partial involvement of the fifth, ninth, tenth, and eleventh cranial nerves.

Onset is usually acute with severe vertigo. Nausea, vomiting, ipsilateral ataxia, muscular hypertonicity, pastpointing and other cerebellar signs are often present. Horner's syndrome is usually present. Sensory disturbances include ipsilateral loss of pain and temperature perception of the face and contralateral hypoesthesia for pain and temperature of the trunk and extremities.

The affected persons have difficulty in swallowing. Persons well over 40 years of age are most often affected.



[ Q: 623 ] MRCPass - Neurology

A 60 year old man has new onset receptive and expressive dysphasia. His past medical history includes diabetes and hypertension.

On examination, he has increased tone and extensor plantar reflex on the right. He also has weakness of the right leg with sensory loss over the same side.

*Which vascular lesion is likely?*

- 1- Anterior cerebral artery
- 2- Superior middle cerebral artery
- 3- Inferior middle cerebral artery
- 4- Posterior cerebral artery
- 5- Posterior inferior cerebellar artery

Answer & Comments

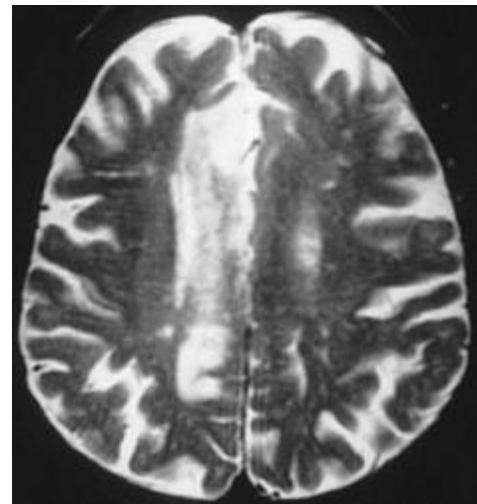
Answer: 1- Anterior cerebral artery

A middle cerebral artery occlusion is likely to cause total hemiplegia. In view of the partial weakness, an anterior cerebral artery (ACA) lesion is more likely.

Complete infarction due to occlusion of one ACA distal to the anterior communicating artery results in a sensory-motor deficit of the opposite foot and leg and a lesser degree of paresis of the arm with sparing of the face. Foot drop is a common finding and difficulty in

walking is even greater than expected from the weakness present.

Dysphasia could occur with the occlusion of a branch of the left ACA. Branch occlusion of the ACA can cause only parts of the total syndrome, producing a spastic weakness or cortical sensory loss in the opposite foot and leg.



Anterior Cerebral Artery Infarct



[ Q: 624 ] MRCPass - Neurology

A 35 year old man is admitted with acute right sided weakness and slurred speech. He does not have a history of hypertension, diabetes or high cholesterol. There is no family history of CVA. He does not smoke. He complains of headaches and generalised limb weakness infrequently.

On examination, he has hypotonia and weakness in the proximal muscles more than the distal muscles. His laboratory tests show a high lactate to pyruvate ratio.

*What is the likely diagnosis?*

- 1- Polymyositis
- 2- Inclusion body myositis
- 3- MELAS
- 4- Polymorphonuclear leukoencephalopathy
- 5- Neuroacanthocytosis

## Answer &amp; Comments

**Answer:** 3- MELAS

This patient has MELAS (myopathy, encephalopathy, lactic acidosis and stroke like episodes).

Lactic acidosis is a very important feature of this disorder, as measured by a high lactate to pyruvate ratio.

How ever, in general, lactic acidosis does not lead to systemic metabolic acidosis, and it may be absent in patients with impressive involvement of the central nervous system.

Patients have a myopathy causing proximal muscle weakness and hypotonia, seizures and strokelike episodes. It is a mitochondrial inherited disorder.



## [ Q: 625 ] MRCPass - Neurology

A 75 year old lady complains of a headache for 2 days in the right side of the head. The pain is worse when she is chewing or talking. She has also had mild fevers and sweats. Her ESR is 80 mm/hr. The vision in the right eye is 6/18 and her left eye is 6/6.

**What is the best course of action?**

- 1- Start iv methylprednisolone
- 2- Organise and await temporal artery biopsy
- 3- CT of the head to exclude space occupying lesion
- 4- MRI of the brain
- 5- Refer to an ophthalmologist

## Answer &amp; Comments

**Answer:** 1- Start iv methylprednisolone

There are early signs of visual loss so high dose steroids should be commenced with the suspicion of temporal arteritis. Although all the other options are reasonable, they may take time and there should not be delay in commencing steroids.



## [ Q: 626 ] MRCPass - Neurology

A 35 year old woman presents with double vision that is worst when trying to read a book or walk down stairs.

**The most likely diagnosis is:**

- 1- Progressive supranuclear palsy
- 2- 4th nerve palsy
- 3- 3rd nerve palsy
- 4- 6th nerve palsy
- 5- Internuclear ophthalmoplegia.

## Answer &amp; Comments

**Answer:** 2- 4th nerve palsy

The superior oblique muscle is innervated by the fourth nerve. The action is to depress the eye and is maximally effective when the eye is looking medially, hence diplopia on reading or going downstairs is typical of fourth nerve paralysis.



## [ Q: 627 ] MRCPass - Neurology

A 65 year old man has muscle weakness, particularly around the thighs and shoulders. His CK is 2,200 U/l. EMG shows reduced amplitude and duration of motor units.

**What is the likely diagnosis?**

- 1- Dermatomyositis
- 2- Myasthenia gravis
- 3- Myotonic dystrophy



- 4- Peripheral neuropathy
- 5- Multiple sclerosis

#### Answer & Comments

Answer: 1- Dermatomyositis

These EMG changes are consistent with a myositis. In motor neuron disease, fibrillation is seen. In myasthenia, there is diminished response to repetitive stimulation.



#### [ Q: 628 ] MRCPass - Neurology

A 42 year old man presents to A+E complaining of severe lower back pain following carpentry work. The pain radiates to his left buttock and thigh.

On examination, he was able to straight leg raise to 45 degrees only on the left side. The sciatic stretch test is positive. He has difficulty plantar flexing his left ankle and has abnormal sensation on the plantar aspect of the foot.

*What is the diagnosis?*

- 1- Cauda equina syndrome
- 2- L2/L3 disc prolapse
- 3- L4/L5 disc prolapse
- 4- L5/S1 disc prolapse
- 5- Common peroneal nerve injury

#### Answer & Comments

Answer: 4- L5/S1 disc prolapse

Ankle dorsiflexion is generally supplied by L4/L5 and plantar flexion supplied by S1/S2.

this case is likely to be due to sciatic nerve palsy.



#### [ Q: 629 ] MRCPass - Neurology

A 60 year old man is brought to hospital having collapsed to the ground suddenly and was unable to move his left leg or arm. There was no loss of consciousness. He has a past medical history of hypertension

only. The episode lasted a few seconds and he has been relatively well. Examination reveals a mild hemiparesis of the left arm and leg.

*Which is the likely diagnosis?*

- 1- Pontine haemorrhage
- 2- Primary epilepsy
- 3- Medullary haemorrhage
- 4- Right internal capsule infarct
- 5- Left internal capsule infarct

#### Answer & Comments

Answer: 4- Right internal capsule infarct

This patient is likely to have a lacunar infarct involving the internal capsule, causing transient contralateral hemiparesis.



#### [ Q: 630 ] MRCPass - Neurology

A 25 year old man has had behavioural disturbance recently. His parents mentioned that his brother has been investigated for liver problems recently. On examination, he has a MMSE score of 28/30. He has a mask like face and was noticed to have hypersalivation.

When investigations are complete, which drug is most likely to be used for treatment?

- 1- Desferrioxamine
- 2- Co careldopa
- 3- Penicillamine
- 4- Interferon alpha
- 5- Chlorpromazine

#### Answer & Comments

Answer: 3- Penicillamine

The likely diagnosis is Wilson's disease. Most patients who present with neuropsychiatric manifestations have cirrhosis. The most common presenting neurologic feature is asymmetric tremor, occurring in approximately half of individuals with Wilson



disease. Frequent early symptoms include difficulty speaking, excessive salivation, ataxia, masklike facies, clumsiness with the hands, and personality changes. The disease is autosomal recessive. Penicillamine is used as a copper chelator.



[ Q: 631 ] MRCPass - Neurology

A 55 year old man presents with a history of slowly progressive, abnormal movements of his body. On examination there are jerky, semi-purposive movements involving the entire body and abnormal tongue movements.

*What is the likely diagnosis?*

- 1- Parkinson's disease
- 2- Motor neuron disease
- 3- Frontal lobe tumour
- 4- Cervical spondylosis
- 5- Huntington's disease

Answer & Comments

Answer: 5- Huntington's disease

There are many causes of chorea.

Inherited- Ataxia-telangiectasia, Huntington disease, Wilson disease.

Drugs - Anticonvulsants (eg, phenytoin, carbamazepine, phenobarbital), Antidopaminergic agents (eg, phenothiazines, haloperidol, metoclopramide)

Behçet disease, antiphospholipid antibody syndrome, Bacterial endocarditis, Herpes simplex encephalitis, Lyme disease.



[ Q: 632 ] MRCPass - Neurology

A 40 year old man has a 5-year history of right-sided cluster headaches with recurrent right sided headaches which last for 2 hours. There is a pattern of daily occurrence for 2 to 3 weeks, followed by a month or so without headaches. The headaches were

described as "explosive" and were graded 9 to 10 in severity on a visual analog scale of 1 to 10.

The quality of the head pain was reported to be throbbing, sharp, shooting, as well as aching. The pain was localized around the right eye, behind the right ear, and in the occipital region. There are no associated visual symptoms, but occasionally flushing is associated. He gets these headaches frequently during the winter.

*What is the likely diagnosis?*

- 1- Migraine
- 2- Trigeminal neuralgia
- 3- Absence seizures
- 4- Sagittal sinus thrombosis
- 5- Cluster headache

Answer & Comments

Answer: 5- Cluster headache

In cluster headaches, there is an association with autonomic features, particularly miosis and ptosis. Cluster headaches occur during the same months in the year typically and are almost five times more common in males. A ophthalmic division of trigeminal nerve distribution involvement is also common.



[ Q: 633 ] MRCPass - Neurology

A 30 year old man complains of spasms in his neck. He has, over the past three years, noticed a crampy sensation in his neck associated with contraction of the muscle on the left. This has now got frequent and uncontrollable. Neurological examination is normal, but on tapping the left side of the neck muscle, it contracts and spasms occur.

*Which of the Following medication may help this?*

- 1- Methysergide
- 2- Levodopa

- 3- Phenytoin
- 4- Lamotrigine
- 5- Methyldopa

#### Answer & Comments

**Answer:** 2- Levodopa

This patient has a dystonia in the neck. Other examples are blepharospasm and torticollis.

This could be helped by levodopa or diazepam. In severe cases, botulinum injections may also help.



#### [ Q: 634 ] MRCPass - Neurology

A 45 year old man was referred for assessment of unsteady gait, which has been present for 6 months. He has lost a stone in weight over the several months. An MRI of the brain shows multiple high signal areas.

A biopsy was taken of one of the lesions. The report shows perivascular infiltrates of lymphocytes affecting white and gray matter. There was minimal myelin loss. CSF examination shows raised white cell count, and oligoclonal bands were not raised.

**What is the most likely diagnosis?**

- 1- Creutzfeldt Jakob disease
- 2- Progressive multifocal leucoencephalopathy
- 3- CNS lymphoma
- 4- Glioma
- 5- HSV encephalitis

#### Answer & Comments

**Answer:** 3- CNS lymphoma

The white matter lesions suggest either multiple sclerosis or lymphoma. Infiltration with lymphocytes in this type of presentation makes a primary lymphoma of the central nervous system likely.



#### [ Q: 635 ] MRCPass - Neurology

A 30 year old man has a painful right eye. On examination, there is decreased visual acuity and a relative afferent pupillary defect of the right eye.

**What is the diagnosis?**

- 1- Optic atrophy
- 2- Optic neuritis
- 3- Glaucoma
- 4- Retinitis pigmentosa
- 5- Internuclear ophthalmoplegia

#### Answer & Comments

**Answer:** 2- Optic neuritis

A painful eye with loss of vision, and also RAPD suggests optic neuritis. The most likely underlying cause is multiple sclerosis.



#### [ Q: 636 ] MRCPass - Neurology

A 50 year old man has developed unsteadiness. He has hypertension and is a smoker of 20/day. On examination he has a cerebellar ataxia and past pointing. His CXR shows a right hilar mass.

**Which of the Following is most likely to reveal the diagnosis?**

- 1- Anti GM1 antibodies
- 2- Anti Yo antibodies
- 3- Phytanic acid levels
- 4- Serum copper
- 5- Serum ferritin

#### Answer & Comments

**Answer:** 2- Anti Yo antibodies

The most likely diagnosis is a paraneoplastic syndrome. Anti Yo antibodies are found in around half of all patients with paraneoplastic cerebellar degeneration. Associated with small cell carcinoma, ovarian tumours and Hodgkin's

lymphoma. Anti Hu antibodies are associated with small cell carcinoma of the lung. It is usually associated with sensory neuropathy or with encephalomyelitis.



[ Q: 637 ] MRCPass - Neurology

A 65 year old man has early signs of cognitive impairment. His wife describes urinary incontinence and unsteadiness on walking in the past six months. Examination reveals ataxia and he has an MTS score of 7/10.

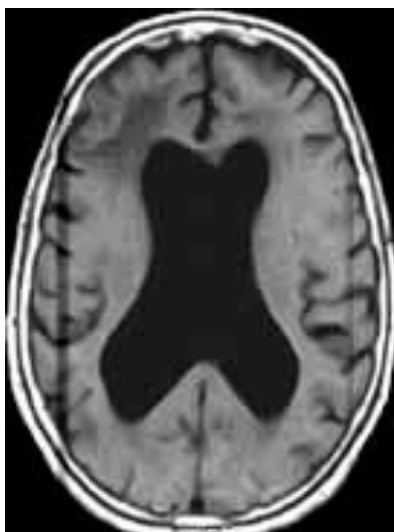
*What is the most likely diagnosis?*

- 1- Lewy body disease
- 2- Alzheimer's dementia
- 3- Creutzfeldt jakob disease
- 4- Normal pressure hydrocephalus
- 5- Shy drager syndrome

Answer & Comments

Answer: 4- Normal pressure hydrocephalus

Normal pressure hydrocephalus (NPH) is a clinical symptom complex characterized by abnormal gait, urinary incontinence, and dementia. Ventricular enlargement occurs out of proportion on the CT scan. Surgical CSF shunting remains the main treatment modality.



[ Q: 638 ] MRCPass - Neurology

A 40 year old man has a 4 week history of dizziness, and vomiting. The onset was acute. He feels that the world was spinning and his balance is poor. His hearing is normal. There is no family history. On examination, he has no cerebellar signs.

*What is the most likely diagnosis?*

- 1- Benign positional vertigo
- 2- Friedrich's ataxia
- 3- Acoustic neuroma
- 4- Vestibular neuronitis
- 5- Vertebro basilar circulation insufficiency

Answer & Comments

Answer: 4- Vestibular neuronitis

Vestibular neuronitis often presents with acute vestibular disturbance that gradually resolves over a few weeks. It is associated with viral infections. Treatment is conservative and supportive.



[ Q: 639 ] MRCPass - Neurology

A 62 year old man complains of headache and on examination of his visual fields you detect a right upper quadrantopia.

*Where is the lesion?*

- 1- Optic chiasm
- 2- Right temporal lobe
- 3- Right parietal lobe
- 4- Left parietal lobe
- 5- Left temporal lobe

Answer & Comments

Answer: 5- Left temporal lobe

Upper quadrantopia is due to temporal lobe lesions and lower quadrantopia to parietal lobe lesions. The visual field is caused by the contralateral lesion.



## [ Q: 640 ] MRCPass - Neurology

A 65 year old man presents with muscle weakness and difficulty swallowing. On examination, he has proximal and distal upper and lower limb weakness. There is wasting of the intrinsic muscles of the fingers and of his thigh muscles. CK is elevated and EMG findings are consistent with a myopathic process.

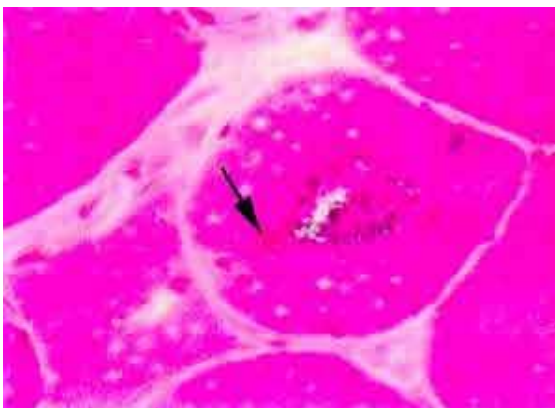
*Which condition is likely?*

- 1- Polymyositis
- 2- Dermatomyositis
- 3- Inclusion body myositis
- 4- Motor neuron disease
- 5- Duchenne muscular dystrophy

## Answer &amp; Comments

Answer: 3- Inclusion body myositis

The distribution of the muscles involved are typical of inclusion body myositis, although the distribution is usually asymmetric. In this condition, dysphagia and respiratory involvement can also occur. Muscle biopsy shows intracellular inclusions (amyloid precursor protein, ubiquitins) and inflammatory infiltrates.



Inclusion body in IBM



## [ Q: 641 ] MRCPass - Neurology

A 65 year old female is admitted with a history of severe headaches. The headaches are worse in the morning and are

associated with nausea. She mentions a blackout a few weeks prior to admission.

On examination of the patient's fundus, the optic cups were filled and the medial margins of the discs were blurred.

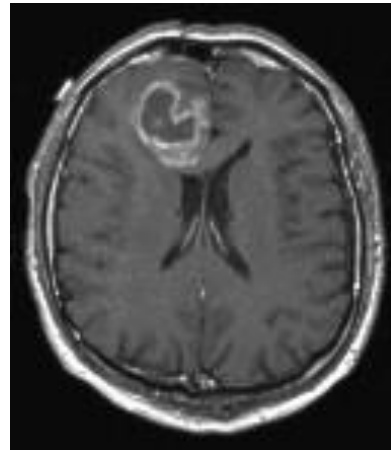
*Which is the most likely cause of this patient's condition?*

- 1- Cerebellar tumour
- 2- Frontal lobe tumour
- 3- Temporal lobe epilepsy
- 4- Benign intracranial hypertension
- 5- Migraine

## Answer &amp; Comments

Answer: 2- Frontal lobe tumour

The history of headaches which are worse in the morning and accompanied by nausea suggests increased intracranial pressure. This is confirmed by the fact the optic discs have blurred margins. The history of a probable seizure with collapse, in combination with all the other factors suggests a likely frontal lobe tumour.



Frontal Lobe Tumour



## [ Q: 642 ] MRCPass - Neurology

A 40 year old woman presents with gradual onset severe headache and visual blurring. On examination, she has bilateral papilloedema.

*Which of the Following may help improve the condition?*

- 1- Vitamin A
- 2- Prednisolone
- 3- Minocycline
- 4- Cyclosporin
- 5- Acetazolamide

#### Answer & Comments

**Answer:** 5- Acetazolamide

Vitamin A, prednisolone, minocycline and cyclosporin make idiopathic intracranial hypertension (used to be known as benign intracranial hypertension) worse. Acetazolamide is used to treat IIH. IIH is likely to be due to high pressure caused by the buildup or poor absorption of cerebrospinal fluid in the subarachnoid space surrounding the brain. The disorder is most common in women between the ages of 20 and 50. Symptoms include headache, nausea, vomiting, and pulsating intracranial noises, closely mimicking symptoms of brain tumors.



#### [ Q: 643 ] MRCPass - Neurology

A 35 year old woman has been admitted to hospital for investigation of progressive weakness in her legs. For the past 5 years. The patient's mother has similar difficulties with weakness and sensory problems.

Examination revealed power of 3/5 distally in the upper and lower limbs with a glove and stocking pattern sensory loss to pain and touch.

*What is the likely diagnosis?*

- 1- Hereditary neuropathy with liability to pressure palsies
- 2- Friedrich's ataxia
- 3- Chronic inflammatory demyelinating polyneuropathy

- 4- Multiple sclerosis
- 5- Hereditary sensori motor neuropathy

#### Answer & Comments

**Answer:** 5- Hereditary sensori motor neuropathy

In view of the family history, this patient is most likely to have hereditary sensori motor neuropathy type I (Charcot Marie Tooth disease).

HMSN 1 is the most common form of hereditary neuropathy. Severely and uniformly slowed nerve conduction velocities (NCVs) and primary hypertrophic myelin pathology with prominent onion bulbs and secondary axonal changes are the hallmarks of the disease. Motor symptoms predominate over sensory symptoms. Often, patients report loss of balance, muscle weakness, and foot deformities. Onset in the first decade of life is typical, but disease develops in some patients in young or mid adulthood.

HMSN 2, on the other hand, represents the nondemyelinating neuronal type with relatively normal NCVs and primary axonal pathology. Although nerves are not enlarged in the neuronal form, weakness often is less marked and onset of this neuropathy is delayed. Peripheral nerves are not enlarged clinically, and weakness of feet and leg muscles predominates; hands are less severely affected than the legs. Patients experience sensory loss in the distal extremities, and foot deformities (ie, pes cavus) tend to be less marked than those of HMSN 1.



#### [ Q: 644 ] MRCPass - Neurology

An 80 year old lady is admitted complaining of acute onset weakness in both legs and low back pain for the previous 4 weeks. She has lost 5 kg of weight recently, and has a Hb of 8.5 g/dl. Her cranial nerves and upper limbs were normal but she has reduced power in both lower limbs of 3/5. She



has a sensory level at T12 and plantar reflexes are upgoing. Rectal tone was normal.

*Which is the best next investigation?*

- 1- Bone scan
- 2- CT scan of the abdomen
- 3- MRI scan of the spine
- 4- CT scan of the brain
- 5- MRI of the brain

#### Answer & Comments

**Answer:** 3- MRI scan of the spine

This patient is likely to have cord compression from a metastases to the spine.

Urgent MRI scan is required to confirm the diagnosis and a referral for either surgery or radiotherapy can then be made.



[ Q: 645 ] MRCPass - Neurology

A 30 year old man had a progressive four month history of stiffness, tremors and unsteadiness. There is no family history of a similar problem.

On examination, there is globally increased tone. Power is normal and there are brisk reflexes throughout. A resting tremor and some abnormal writhing movements in the arms were observed. He has an MMSE score of 25/30.

*What is the most likely diagnosis?*

- 1- Motor neuron disease
- 2- Polymyalgia rheumatica
- 3- Friedrich's ataxia
- 4- Wilson's disease
- 5- Temporal arteritis

#### Answer & Comments

**Answer:** 4- Wilson's disease

Neuroacanthocytosis, Wilson's, Huntington's, paraneoplastic syndrome can present with

choreiform movements and cognitive impairment. Cerebellar signs are more typical in Friedrich's ataxia.



[ Q: 646 ] MRCPass - Neurology

A 60 year old man develops swallowing difficulties and complains of difficulty walking up stairs.

On examination, there is weakness and wasting of the distal muscles of the arms. There are visible fasciculations. Reflexes are brisk and the plantars are upgoing. There are no sensory abnormalities. Speech and language assessment suggests the presence of pharyngeal muscle weakness.

*What is the most likely diagnosis?*

- 1- Guillain Barre
- 2- Motor neuron disease
- 3- Myasthenia gravis
- 4- Chronic inflammatory demyelinating polyneuropathy
- 5- Paraneoplastic syndrome

#### Answer & Comments

**Answer:** 2- Motor neuron disease

This is a classical presentation of motor neuron disease. There is a pseudobulbar palsy in association with fasciculations of the muscles and a mixture of upper and lower motor neuron signs.



[ Q: 647 ] MRCPass - Neurology

A 35-year-old female was admitted to the hospital after experiencing a sudden and severe episode of headache.

No precipitating factor was identified. Except for mild neck stiffness, general physical and neurological examinations were unremarkable.

On admission, computed tomography (CT) scan showed a thin collection of blood on the



right sylvian cistern, establishing the diagnosis of subarachnoid haemorrhage.

The admitting doctor is considering further management.

*Which of the Following medications have been shown to decrease the incidence of cerebral infarction in patients with subarachnoid haemorrhage?*

- 1- Amlodipine
- 2- Prednisolone
- 3- Nimodipine
- 4- Acetazolamide
- 5- Bendrofluazide

#### Answer & Comments

Answer: 3- Nimodipine

Nimodipine (calcium channel blocker) has been shown to improve outcome in patients with subarachnoid haemorrhage. It is given 60mg orally, 4-hourly.



[ Q: 648 ] MRCPass - Neurology

A 28 year old woman is assessed for easy fatigue. She complains of weakness of her hands causing poor coordination and double vision. This is worst in the evenings.

*What is the diagnosis?*

- 1- Guillain barre syndrome
- 2- Multiple sclerosis
- 3- Myasthenia gravis
- 4- Paraneoplastic syndrome
- 5- Central pontine myelinolysis

#### Answer & Comments

Answer: 3- Myasthenia gravis

Myasthenia gravis is an acquired autoimmune disorder characterised by weakness, typically of the periorbicular, facial, bulbar, and girdle muscles. Diplopia, ptosis and slurring of the

speech are common symptoms. There is typically fatigability on examination, and symptoms are worse during the evenings. It is associated with serum IgG antibodies to acetylcholine receptors in the postsynaptic membrane of the neuromuscular junction.



[ Q: 649 ] MRCPass - Neurology

A 35 year old lady has developed progressive weakness in the hands and feet over a week. There is some associated numbness and tingling in the hands and feet. She complains of breathing difficulty. She had several episodes of diarrhoea two weeks ago.

On examination, there is slurring of speech. Her reflexes are all absent and there is sensory loss in a glove and stocking pattern.

*Which is the next appropriate step?*

- 1- MRI
- 2- Lumbar puncture
- 3- Vital capacity
- 4- EMG
- 5- Anti Ach antibody

#### Answer & Comments

Answer: 3- Vital capacity

Guillain Barre syndrome is the likely diagnosis. As she is complaining of breathlessness, vital capacity measurement would be essential because of potential rapid deterioration in respiratory function.



[ Q: 650 ] MRCPass - Neurology

A 40 year old patient has been diagnosed with migraine recently. The migraines seem to have increased in frequency since being on a triptan.

*What is the next medication to use?*

- 1- Propanolol
- 2- Tramadol
- 3- Carbamazepine

4- Neurofen

5- Aspirin

**Answer & Comments**Answer: 1- Propanolol

In migraines, beta blockers, calcium channel blockers and antidepressants may be helpful in prophylaxis.

**[ Q: 651 ] MRCPass - Neurology**

A 50 year old man presents with speech difficulty. He has difficulty with word identification and repetition. He is able to pick out correct objects when instructed to do so and is not confused.

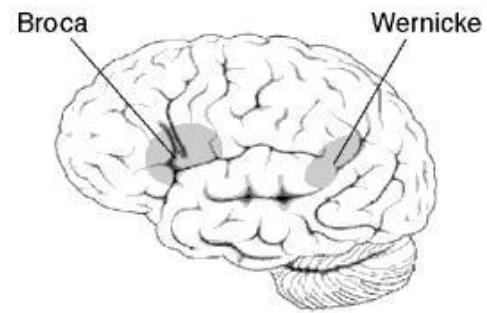
*Where is the lesion?*

- 1- Superior frontal lobe
- 2- Parietal lobe
- 3- Medial superior temporal lobe
- 4- Posterior, superior temporal lobe (Wernicke's area)
- 5- Inferior frontal lobe (Broca's area)

**Answer & Comments**Answer: 5- Inferior frontal lobe (Broca's area)

Broca's Area (Inferior frontal lobe) damage causes impaired fluency, intact comprehension, impaired repetition [expressive dysphasia].

Wernicke's Area (posterior, superior temporal lobe) damage causes normal fluency, impaired comprehension, impaired repetition [receptive dysphasia].

**Left Side View****[ Q: 652 ] MRCPass - Neurology**

A 60 year old man has presented with an episode of transient visual loss lasting for 5 minutes. He maintained consciousness throughout. A CT scan did not show any changes. He mentions that he is driving currently.

*How long is a patient required to avoid driving a car Following recovery from a single transient ischaemic attack?*

- 1- 6 weeks
- 2- 1 month
- 3- 3 months
- 4- 6 months
- 5- 1 year

**Answer & Comments**Answer: 2- 1 month

Following a TIA, a patient should not drive for 1 month. If there were recurrent TIAs, then the patient should be symptom free for 3 months before driving.

Following a seizure with altered conscious level, a patient should not drive for 1 year. All cases should be reported to the Driver Vehicle Licensing Agency (DVLA).

**[ Q: 653 ] MRCPass - Neurology**

A 40 year old man complained of severe headache. Following this, he then developed nausea and vomiting and came to

A+E to be assessed. A CT scan demonstrated blood in the left sylvian fissure.

*Which of the Following is the most likely cause?*

- 1- Migraine
- 2- Subdural haematoma
- 3- Sagittal sinus thrombosis
- 4- Carotid dissection
- 5- Berry aneurysm rupture

#### Answer & Comments

**Answer:** 5- Berry aneurysm rupture

The history is consistent with a subarachnoid haemorrhage, caused by rupture of a berry (saccular) aneurysm.



#### [ Q: 654 ] MRCPass - Neurology

A 46 year old man had suffered from classical seropositive rheumatoid arthritis for 10 years. He has never received treatment with phenylbutazone, gold, or antimalarials. intense pain in the right hand. Over a course of 3 weeks, he noticed pain, numbness, and tingling on the lateral aspect of the palm and in the fourth and fifth fingers of the right hand. On examination, he has weakness in the abductors and adductors of the fingers, and his hand is held in a clawed position.

*What is the diagnosis?*

- 1- Common peroneal nerve lesion
- 2- Lateral cutaneous nerve lesion
- 3- Radial nerve lesion
- 4- Median nerve lesion
- 5- Ulnar nerve lesion

#### Answer & Comments

**Answer:** 5- Ulnar nerve lesion

The ulnar nerve supplies the lumbricals (claw hand) and also the Interosseus- Dorsal:

Abductors (DAB) and Palmar: Adductors (PAD).

A lesion in the anterior interosseous nerve results in weakness of the terminal phalanges of the thumb and index fingers.



Claw Hand



#### [ Q: 655 ] MRCPass - Neurology

A 65 year old man has recently been involved in an accident. On examination, there was increased tone in the right leg, he had right sided leg weakness and loss of proprioception on the right side of the lower limb. There was also left sided loss of sensation to pain on the left leg.

*What is the diagnosis?*

- 1- Myalgic encephalitis
- 2- Motor neuron disease
- 3- Brown Sequard syndrome
- 4- Creutzfeldt Jakob disease
- 5- Subacute combined degeneration syndrome

#### Answer & Comments

**Answer:** 3- Brown Sequard syndrome

Brown Sequard or hemisection of the spinal cord causes in loss of sensation to pain and temperature contralateral to the lesion, with ipsilateral loss of sensation for position and vibration, and upper motor neuron paralysis ipsilateral to the lesion.



## [ Q: 656 ] MRCPass - Neurology

A 38 year old lady has difficulty walking. On examination, she has an ataxic gait, increased tone in the legs with hyperreflexia and motor weakness.

*What diagnostic investigation should be arranged?*

- 1- CT scan of the brain and spine
- 2- MRI of brain and spine
- 3- Lumbar spine X ray
- 4- EMG
- 5- EEG

## Answer &amp; Comments

Answer: 2- MRI of brain and spine

The diagnosis is likely to be multiple sclerosis. MRI would be useful to assess for demyelinating lesions. Following this lumbar puncture is also helpful to confirm the presence of oligoclonal bands (when compared to serum).



## [ Q: 657 ] MRCPass - Neurology

A 18 year old man has difficulty in walking. He has had problems with vision which were difficult to correct with glasses.

On examination, there is nystagmus and pallor of the optic discs. He has a dysarthria and intention tremor. There are absent reflexes in the knees and ankles. Plantars are equivocal. Pes cavus was noted.

*What is the most likely diagnosis?*

- 1- Spinocerebellar ataxia
- 2- Friedrich's ataxia
- 3- Alcoholic cerebellar degeneration
- 4- Wilson's disease
- 5- Hereditary sensorimotor neuropathy

## Answer &amp; Comments

Answer: 2- Friedrich's ataxia

Friedrich's Ataxia is an autosomal recessively inherited. Patients may have cardiomyopathy and diabetes. Neurological abnormalities include optic atrophy and retinitis pigmentosa, nystagmus, cerebellar disease and signs, loss of dorsal column sensation and weakness. Pes cavus (high arched feet) is usually present.



Pes Cavus



## [ Q: 658 ] MRCPass - Neurology

A 65 year old man has been admitted Following an episode of confusion. He was on two different diuretic drugs on admission which were discontinued due to hyponatraemia. On day 1, he had a sodium of 112 mmol/l and on day 3 he had a sodium of 145 mmol/. He had developed by day 3, spastic quadriparesis and pseudobulbar palsy.

*What is the likely diagnosis?*

- 1- Multiple sclerosis
- 2- Tuberculous meningitis
- 3- Motor neuron disease
- 4- Central pontine myelinolysis
- 5- Glioma

## Answer &amp; Comments

Answer: 4- Central pontine myelinolysis

The upper motor neuron features and rapid correction of hyponatraemia suggests central

pontine myelinolysis. The neurological features may improve gradually but certain patients have permanent neurological deficits from rapid changes in serum sodium.



[ Q: 659 ] MRCPass - Neurology

A 40 year old man complains of pain in the right eye, which had worsened over the last few days.

On examination, he had a ptosis of right eye. He also had weakness of superior upgaze of the right eye and loss of accommodation reflex.

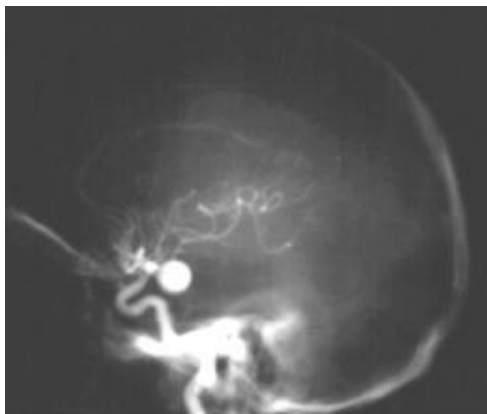
*Which of the Following is likely?*

- 1- Myasthenia gravis
- 2- Neurosyphilis
- 3- Multiple sclerosis
- 4- Posterior communicating artery aneurysm
- 5- Myotonic dystrophy

Answer & Comments

Answer: 4- Posterior communicating artery aneurysm

Patients with painful, isolated third nerve palsy with pupillary involvement is most likely due to a posterior communicating artery aneurysm. Other causes of mononeuritis multiplex (diabetes, vasculitis, syphilis), can also cause a third nerve palsy, but seldom are painful.



Arteriogram - Lateral view showing a posterior communicating artery aneurysm.



[ Q: 660 ] MRCPass - Neurology

A 55 year old man who was a heavy smoker in the past complains of arm weakness. On examination, there was postural hypotension. He has proximal muscle weakness with fatiguability and loss of tendon reflexes.

*What is the likely diagnosis?*

- 1- Motor neuron disease
- 2- Myasthenia gravis
- 3- Transverse myelitis
- 4- Guillain Barre syndrome
- 5- Lambert Eaton myasthenic syndrome

Answer & Comments

Answer: 5- Lambert Eaton myasthenic syndrome

In Lambert Eaton myasthenic syndrome, 60% of cases are paraneoplastic (small cell lung ca is most associated). The clinical features are proximal weakness, loss of tendon reflexes and autonomic dysfunction.



[ Q: 661 ] MRCPass - Neurology

A 60 year old man has a right wrist drop. On examination he has an absent triceps jerk on the right as well as an area of sensory loss over the dorsum of the middle finger on the right hand.

*Where is the lesion?*

- 1- Median nerve
- 2- Radial nerve
- 3- Brachial nerve
- 4- Ulnar nerve
- 5- Musculocutaneous nerve

Answer & Comments

Answer: 2- Radial nerve

Radial nerve dysfunction involves impaired movement or sensation of the back of the arm (triceps), the forearm, or the hand caused by damage to the radial nerve. There is weakness of wrist and elbow extension, and absent triceps jerk.



Wrist Drop



[ Q: 662 ] MRCPass - Neurology

A 24 year old tennis player find that he is unable to extend his right wrist. On examination, there is weakness of the extensors of the wrist and digits.

*Which of the Following structures is damaged?*

- 1- Radial nerve
- 2- Musculocutaneous nerve
- 3- Median nerve
- 4- Medial cord of the brachial plexus
- 5- Lateral cord of the brachial plexus

#### Answer & Comments

Answer: 1- Radial nerve

The radial nerve may be damaged anywhere in its course. It is most commonly affected in the upper arm where it winds round the humerus and in the extensor muscle compartment of the forearm affecting the posterior interosseous branch. Radial nerve palsy causes weakness of the wrist and elbow extension, and weakness of forearm supination. Sensory loss on the dorsum of hand and forearm may also be present.



Radial Nerve Palsy



[ Q: 663 ] MRCPass - Neurology

A 50 year old lady has a painful cheek (maxillary area) when chewing. The neurologist diagnoses trigeminal neuralgia.

*Which is the best medication to try?*

- 1- Benzotropine
- 2- Tramadol
- 3- Diclofenac
- 4- Propanolol
- 5- Carbamazepine

#### Answer & Comments

Answer: 5- Carbamazepine

For trigeminal neuralgia, carbamazepine is the first treatment of choice, but baclofen can also be tried.



[ Q: 664 ] MRCPass - Neurology

A 46 year old woman complains of diplopia. On examination, she has double vision on looking to the left only.

There is failure of adduction in the right eye, and nystagmus in the left eye whilst looking to the left.

*Which one of the Following is likely?*

- 1- Superior rectus palsy
- 2- Inferior rectus palsy
- 3- Lateral rectus palsy
- 4- Medial longitudinal fasciculus defect
- 5- Inferior cerebellar peduncle lesion



## Answer &amp; Comments

**Answer:** 4- Medial longitudinal fasciculus defect

Diplopia on eye abduction is likely to be due to either a lateral rectus palsy or medial longitudinal fasciculus (MLF) defect. This scenario fits one of internuclear ophthalmoplegia (which is due to an MLF defect). In this scenario it is a right sided INO same side as the eye which fails to adduct.



Internuclear ophthalmoplegia



## [ Q: 665 ] MRCPass - Neurology

A 35 year old patient with HIV is assessed for new onset right arm weakness. An MRI scan of his head shows a temporo-parietal ring enhancing lesion.

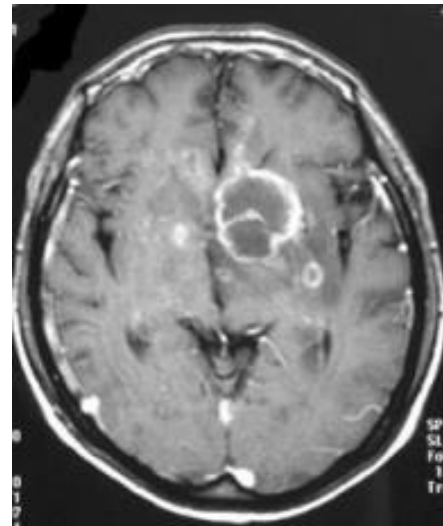
*Which is the most likely cause for this?*

- 1- Lymphoma
- 2- Toxoplasmosis
- 3- Behcet's disease
- 4- CMV
- 5- HSV

## Answer &amp; Comments

**Answer:** 2- Toxoplasmosis

Cerebral toxoplasmosis is the most common cause of a ring enhancing lesion causing neurological defect in a HIV patient.



Cerebral Toxoplasmosis



## [ Q: 666 ] MRCPass - Neurology

A 45 year old lady is with a sudden onset of severe headache. It came on with a 'bang'. A CT scan of the brain is reported as normal. There are no neurological signs on examination.

*The next best management step is to:*

- 1- Start ergotamine
- 2- MRI of the brain
- 3- Perform a lumbar puncture immediately
- 4- Perform a lumbar puncture 24 hours after the onset of headache
- 5- Repeat CT scan 24 hours later

## Answer &amp; Comments

**Answer:** 4- Perform a lumbar puncture 24 hours after the onset of headache

Lumbar puncture should be performed in suspected SAH (ideally after 24 hours from onset of headache) if the CT scan is not diagnostic. The CSF specimen should be examined by spectrophotometry for the presence of xanthochromia due to the presence of oxyhaemoglobin and bilirubin.



## [ Q: 667 ] MRCPass - Neurology

A 40 year old man was injured in a road traffic accident. On examination, he is unable to extend his right hand at the wrist. The triceps jerk is diminished, and there is weakness of wrist flexion. A small area of over the right middle finger has sensory loss to pain and touch.

*Where is the lesion?*

- 1- Radial nerve
- 2- Ulnar nerve
- 3- C5 root
- 4- C7 root
- 5- T1 root

## Answer &amp; Comments

Answer: 4- C7 root

A C5 root lesion causes weakness in abduction of the shoulder and biceps, as well as sensory loss in the upper arm. A C7 root lesion causes weak wrist extensors and flexors, weak finger extensors and sensory loss to middle finger. A radial nerve lesion would not involve finger flexors. A T1 lesion would cause weak intrinsic hand muscles.



## [ Q: 668 ] MRCPass - Neurology

A 62 year old woman presents with diplopia. On examination, she has a fixed dilated pupil on the right side. Direct light reflex and accommodation reflex are totally absent.

*Which one of the Following is most likely?*

- 1- Argyll Robertson pupil
- 2- Horner's syndrome
- 3- 3rd nerve palsy
- 4- Pilocarpine
- 5- Uveitis

## Answer &amp; Comments

Answer: 3- 3rd nerve palsy

Pilocarpine is a miotic, and all the rest are causes of small pupils as well. Although there is no mention of ptosis or oculomotor nerve palsy, this is the only answer which fits with a fixed dilated pupil



## [ Q: 669 ] MRCPass - Neurology

A 60 year old man has previously diagnosed with pernicious anaemia. He was non compliant with medication for several years. He now has unsteadiness and difficulty walking.

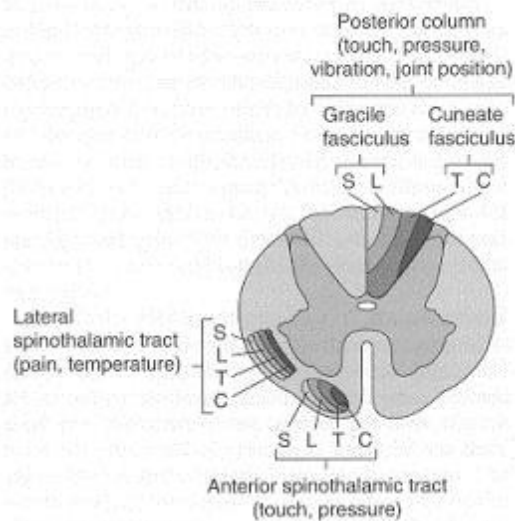
*Which of the Following lesions is likely?*

- 1- Corpus callosum
- 2- Spinothalamic tract
- 3- Dorsal columns
- 4- Thalamus
- 5- Basal ganglia

## Answer &amp; Comments

Answer: 3- Dorsal columns

The diagnosis is Subacute Combined Degeneration of the cord. The posterior columns and corticospinal tracts are specifically damaged, but the clinical picture is complicated by the early development of coexistent peripheral nerve damage.



1- L2

2- L3

3- L4

4- L5

5- S1

#### Answer & Comments

Answer: 3- L4

In contrast, L5 lesion can cause pain radiating through the buttock, down the posterolateral aspect of the thigh, lateral aspect of calf and across the dorsum of the foot.



#### [ Q: 670 ] MRCPass - Neurology

A 25 year old lady presents with two month's history of episodic visual loss affecting the right eye. Over the last two years, she had gained a considerable amount of weight. Examination showed bilateral optic disc swelling and small retinal haemorrhages in the right eye.

*Which diagnosis is likely?*

1- Multiple sclerosis

2- Grave's ophthalmopathy

3- Retinitis pigmentosa

4- Benign intracranial hypertension

5- Kearn Sayre's disease

#### Answer & Comments

Answer: 4- Benign intracranial hypertension

A high BMI is associated with BIH. The condition can be worsened by tetracycline and oral contraceptive pills.



#### [ Q: 671 ] MRCPass - Neurology

A 60 year old lady presents with back pain that radiates to the knee and down the medial side of the calf towards the medial malleolus.

*Which nerve root is affected?*



#### [ Q: 672 ] MRCPass - Neurology

A 21 year old man presents with a fever and headache. His temperature persists and he now complains of a bad headache. He is disorientated in casualty where he is assessed. During examination, he has a generalized seizure. A CT scan is performed and it is normal. CSF examination shows a protein of 0.3g and 10 white cells, predominantly lymphocytes. An EEG showed periodic sharp wave activity.

*What is the most likely diagnosis?*

1- Meningococcal meningitis

2- TB meningitis

3- HSV encephalitis

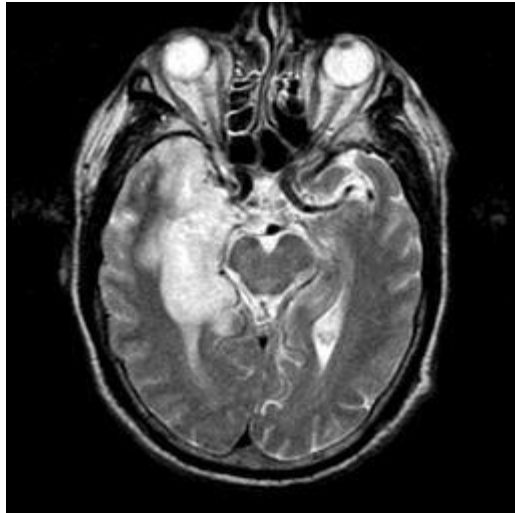
4- Progressive multifocal leucoencephalopathy

5- Listeria meningitis

#### Answer & Comments

Answer: 3- HSV encephalitis

HSV encephalitis is the most likely - there can be disorientation or dysphasia and seizures. There is also mild lymphocytosis on the CSF. In HSV encephalitis, MRI may show frontal or temporal lobe involvement. EEG may show periodic sharp wave activity temporally and background of focal or diffuse slow ing.



Right temporal lobe involvement in HSV encephalitis



[ Q: 673 ] MRCPass - Neurology

A 65 year old man is assessed on the ward for weakness in his legs. He is an ex smoker and drinks 15 units of alcohol in a week. His wife mentions that he is confused. On examination, his MMSE score is 20/30. He has an ataxic gait. There is bilateral pyramidal weakness and coordination is impaired. Routine blood tests are normal. An MRI scan of the head shows diffuse white matter changes, more in the cerebellar region than the cerebrum.

*Which of these tests would help most in confirming the diagnosis?*

- 1- CSF for oligoclonal bands
- 2- CSF for anti Hu and anti Yo antibodies
- 3- CSF for TB culture
- 4- EEG
- 5- EMG

Answer & Comments

**Answer:** 2- CSF for anti Hu and anti Yo antibodies

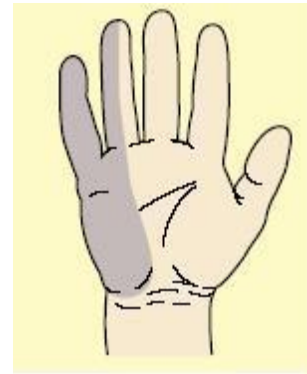
Anti Hu and anti Yo antibodies would help confirm a diagnosis of paraneoplastic syndrome. Multiple sclerosis is unlikely in view

of late presentation and is not commonly associated with dementia.



[ Q: 674 ] MRCPass - Neurology

A 45 year old lady has numbness in the right little finger and aspect of the palm shown in the picture. The small muscles of the hand are weak.



*Which nerve is affected?*

- 1- Median nerve
- 2- Radial nerve
- 3- Ulnar nerve
- 4- Anterior interosseous nerve
- 5- Posterior interosseous nerve

Answer & Comments

**Answer:** 3- Ulnar nerve

The ulnar nerve innervates the third and fourth lumbricals, the interossei and adductor pollicis. Sensation is supplied to the fifth finger and the ulnar part of the fourth finger.



[ Q: 675 ] MRCPass - Neurology

A 35 year old man has bradykinesia and rigidity of his limb movements. He was also noticed to have choreiform movements when observed. He has a history of poor development during the latter part of school education.

*What is the most likely diagnosis?*

- 1- New variant CJD

- 2- Parkinson's disease
- 3- Alzheimer's disease
- 4- Normal pressure hydrocephalus
- 5- Huntington's disease

#### Answer & Comments

**Answer:** 5- Huntington's disease

In Huntington's disease, as the disease progresses, chorea coexists with and gradually is replaced by dystonia and parkinsonian features, such as bradykinesia, rigidity, and postural instability. It is also associated with cognitive impairment as well as psychiatric manifestations.



#### [ Q: 676 ] MRCPass - Neurology

A 65 year old man has had a 6 month history of progressive worsening of confusion. He had left the cooker on several times and accused the neighbours of spying on him.

On examination, his face is expressionless and he has a monotonous speech. Cranial nerve are normal.

Increased tone is present in all 4 limbs. Reflexes, power and sensation are all normal.

*What is the most likely diagnosis?*

- 1- Parkinson's disease
- 2- Lewy body dementia
- 3- Alzheimer's dementia
- 4- Huntington's chorea
- 5- Creutzfeldt Jakob disease

#### Answer & Comments

**Answer:** 2- Lewy body dementia

This patient has parkinsonism, with bradykinesia and rigidity. In view of the deterioration in mental function and delusion, Lewy body dementia is more likely than Parkinson's disease.



#### [ Q: 677 ] MRCPass - Neurology

A 74 year old lady lives alone and is self caring. She has home help twice a week. two days ago, she was found wandering the street and appears confused. The ambulance crew who brought her to hospital has noticed that she has been incontinent of urine.

On examination, she walks with a wide based gait and has an MMSE score of 17 / 30. Her temperature is 36.9°C and she has a CRP of 30 mg/l.

*What is the most likely diagnosis?*

- 1- Urinary tract infection
- 2- Subdural haematoma
- 3- Drug overdose
- 4- Normal pressure hydrocephalus
- 5- Alzheimer's disease

#### Answer & Comments

**Answer:** 4- Normal pressure hydrocephalus

Normal pressure hydrocephalus (NPH) is a clinical symptom complex characterized by abnormal gait, urinary incontinence, and dementia. The CRP is not specific and there is insufficient evidence for a UTI in this case.



#### [ Q: 678 ] MRCPass - Neurology

A 50 year old man presents with weakness in his arms and legs which is worse at the end of the day. On examination he has bilateral ptosis and decreased reflexes.

*What test will confirm that his muscle weakness is due to Myasthenia Gravis rather than Lambert Eaton myasthenic syndrome?*

- 1- Tensilon test
- 2- Trial of pyridostigmine
- 3- Trial of prednisolone
- 4- EMG
- 5- Muscle biopsy

## Answer &amp; Comments

**Answer:** 4- EMG

The main differential is myasthenia gravis and LEMS. Myasthenia gravis can be differentiated from Eaton Lambert myasthenic syndrome by electromyography. Repetitive stimulation in myasthenia gravis leads to a decrement of evoked muscle action potentials, whilst in myasthenic syndrome the condition improves by repetitive stimulation.



## [ Q: 679 ] MRCPass - Neurology

A 60 year old patient has been confused for 1 week. His wife also mentions he had two episodes of tonic clonic seizures. He has a recent diagnosis of small-cell lung cancer which is treated with radiotherapy.

**What is the diagnosis?**

- 1- Myasthenia gravis
- 2- Meningitis
- 3- Paraneoplastic syndrome
- 4- Cerebellar stroke
- 5- Wilson's disease

## Answer &amp; Comments

**Answer:** 3- Paraneoplastic syndrome

A wide variety of paraneoplastic neurological manifestations have been described, but parkinsonism is uncommon. Cerebellar degeneration, tremor and movement disorders, and Lambert Eaton Myasthenic syndromes are the commonest.



## [ Q: 680 ] MRCPass - Neurology

A patient has marked dizziness and unsteadiness during walking. On examination, he has a left sided Horner's syndrome and left sided weakness. There is loss of sensation to pinprick on the right side.

**What is the likely diagnosis?**

- 1- Left internal capsule infarct

- 2- Posterior inferior cerebellar artery occlusion
- 3- Medullary infarct
- 4- Multiple sclerosis
- 5- Vertebral artery dissection

## Answer &amp; Comments

**Answer:** 2- Posterior inferior cerebellar artery occlusion

Also known as Wallenberg's syndrome, the signs are

vertigo, ipsilateral cerebellar signs and weakness, and contralateral sensory loss. There is also cranial nerve

involvement causing dysphagia and dysarthria.



## [ Q: 681 ] MRCPass - Neurology

A 55 year old man has type 2 diabetes. He complains of difficulty walking. On examination, he is unable to evert his right foot. He has intact knee reflexes. There is also sensory loss in the lateral aspect of the foot to pin prick.

**Which nerve root is involved?**

- 1- L2
- 2- L3
- 3- L5
- 4- S1
- 5- S2

## Answer &amp; Comments

**Answer:** 3- L5

The common peroneal nerve is involved. Nerve roots L5 and S1 supply the nerve for foot eversion.

The cutaneous sensory supply corresponds to the lateral part of the foot.







[ Q: 682 ] MRCPass - Infectious disease

A 50 year old woman returned from Sri Lanka several days ago. She presents to hospital with headaches, myalgia and a fever of 38.5°C.

Examination reveals multiple petechiae.

Her bloods show Hb 13 g/dl, WCC  $11 \times 10^9/L$ , platelet count  $70 \times 10^9/L$ .

Thick and thin films for malaria are negative.

*Which one of the following infections is most likely?*

- 1- Plasmodium malariae
- 2- Brucella
- 3- Rickettsia
- 4- Plasmodium ovale
- 5- Dengue fever

Answer & Comments

Answer: 5- Dengue fever

Dengue fever is a condition caused by an RNA arbovirus which is common in tropical and subtropical areas, particularly India, South East Asia and the Pacific. Fevers, joint pains, myalgia, rash and retro-orbital pain are common. A petechial rash suggests the possibility of impending serious sequelae (dengue haemorrhagic fever/shock syndrome) and indicates that she has been previously infected with another serotype.



[ Q: 683 ] MRCPass - Infectious disease

A 25 year old man presents with middle lobe pneumonia. He is allergic to penicillin, so cefuroxime is considered for treatment.

*What is the risk of allergy to a cephalosporin antibiotic in someone with a penicillin allergy?*

- 1- 1 in 10000
- 2- 1 in 1000
- 3- 1 in 100

4- 1 in 10

5- All are allergic

Answer & Comments

Answer: 4- 1 in 10

The risk of allergy is usually 5-10%.



[ Q: 684 ] MRCPass - Infectious disease

A 25 year old man presented to an emergency department with a 1-day history of fever, headache and myalgia.

Two weeks before his presentation, he had returned from a 10-day trip to Costa Rica, where he had injured the sole of his foot on coral. After injuring his foot, he had swum in freshwater rivers. Thick and thin blood films examined at the time for malaria parasites were negative.

*What is the likely diagnosis?*

- 1- Amoebiasis
- 2- Leishmaniasis
- 3- Schistosomiasis
- 4- Leptospirosis
- 5- Brucella abortus

Answer & Comments

Answer: 4- Leptospirosis

Leptospira species are endemic in feral and domestic mammals, reptiles and amphibians. Rats and other rodents are the most important sources for human infection. This usually occurs through contact with urine-contaminated soil or water, contact with infected animal tissue, or through rat bites.

Pathogenic leptospires rapidly invade the bloodstream after penetrating skin or mucous membranes, and multiply in small blood vessel endothelium, resulting in damage and vasculitis in major organs. The mortality rate ranges from 4% to 10%, and adverse

indicators are dyspnoea, oliguria, raised white cell count, abnormalities on ECG, and alveolar infiltrates on chest x-ray.

Oral doxycycline is highly efficacious.



[ Q: 685 ] MRCPass - Infectious disease

A 2 year old, was brought to casualty with a running nose, sneezing, and slight irritability. Her mother said that child was healthy and was running around until several days ago.

No specific treatment was initiated for this "mild cold". Two weeks later, her mother returns because the child had a cyanotic (turned blue) episode during a coughing spell. She indicates that the cough appears to be worsening, particularly at night. It often comes in spasms and she hears "gasping" sound after a coughing spell, and he frequently vomits after coughing.

On examination, he appears mildly dehydrated but not distressed. His body temperature is 37.2°C. His chest is clear and his abdominal examination is normal. A full blood count reveals leucocytosis and a marked lymphocytosis.

*What is the likely diagnosis?*

- 1- Whooping cough
- 2- Tuberculosis
- 3- Epiglottitis
- 4- Pneumococcal pneumonia
- 5- Varicella pneumonia

#### Answer & Comments

Answer: 1- Whooping cough

Whooping cough (pertussis) is caused by the gram negative bacterium *Bordetella pertussis*. Infection is characterised by paroxysms of coughing (with a 'w hoop'). Lymphocytosis is commonly seen.



[ Q: 686 ] MRCPass - Infectious disease

A 45 year old HIV positive man presents with breathlessness. He has a temperature of 38°C. The blood gases show a pH of 7.30, pO<sub>2</sub> of 8kPa and pCO<sub>2</sub> of 3 kPa. CXR shows bilateral interstitial and alveolar consolidation.

*Which of the following medications should be used?*

- 1- Quadruple anti TB therapy
- 2- Amphotericin
- 3- Co-trimoxazole
- 4- Gentamicin
- 5- Teicoplanin

#### Answer & Comments

Answer: 3- Co-trimoxazole

The patient has pneumocystis carinii pneumonia and is hypoxic on the blood gases. IV co-trimoxazole, clindamycin or pentamidine can be used to treat this.



[ Q: 687 ] MRCPass - Infectious disease

A 42 year old woman is referred to A&E with bilateral leg weakness 6 weeks after returning from a holiday in Eastern Europe. She also complains of general malaise.

On examination she appeared unwell and was had a temperature of 38.8°C. She has cervical lymphadenopathy.

Her pharynx was inflamed with areas of exudate on the pharyngeal wall.

*What is the most likely diagnosis?*

- 1- Campylobacter infection
- 2- Staphylococcal sore throat
- 3- Infectious mononucleosis
- 4- Hodgkin's disease
- 5- Diphtheria

## Answer &amp; Comments

Answer: 5- Diphtheria

Diphtheria is an acute disease caused by *Corynebacterium diphtheriae*, still more common in Eastern Europe. The diagnosis is clinical but can also be confirmed by culture of the organism from a throat swab.

Diphtheria anti-toxin should be given intramuscularly if there is any clinical suspicion of diphtheria. Penicillin or erythromycin should be given for a week.



Diphtheria



[ Q: 688 ] MRCPass - Infectious disease

A 40 year old lady presents with fevers and chest pains. The chest pains are worse when she takes a deep breath. Her temperature is 38.9°C, BP 105/70 mmHg and pulse 110. An ECG shows diffuse T wave inversion. An echocardiogram shows mild tricuspid regurgitation, no vegetations on any valves and no pericardial effusion. Her troponin T is 0.3 ng/mL (normal <0.05).

*Which of the following organisms is most likely?*

- 1- Respiratory syncytial virus
- 2- Legionella

- 3- Bartonella
- 4- Streptococcus viridans
- 5- Coxsackie virus

## Answer &amp; Comments

Answer: 5- Coxsackie virus

The clinical presentation is consistent with myocarditis. Myocarditis can present with pleuritic chest pains as well as troponin rise and T wave inversion on the ECG. The commonest organism is coxsackie virus (serology can measure this). Other causes are influenza, rubella, diphtheria, typhoid and tuberculosis.



[ Q: 689 ] MRCPass - Infectious disease

A 25 year old student returns from Ghana with fevers and nocturnal sweats. She has a blood film showing 5.5% of red blood cells infected with *plasmodium falciparum*. She was commenced on intravenous quinine due to the high parasite count.

*Which one of the following is a well known side effect of quinine therapy?*

- 1- Diarrhoea
- 2- Hypoglycaemia
- 3- Psychosis
- 4- Lipodystrophy
- 5- Deranged liver function

## Answer &amp; Comments

Answer: 2- Hypoglycaemia

Quinine can be given orally to treat *falciparum* malaria. Intravenous infusion of quinine is usually indicated only in severe cases (e.g. cerebral malaria).

Hypoglycaemia is an important side effect of quinine therapy. Glucose should be monitored in those having intravenous quinine.



[ Q: 690 ] MRCPass - Infectious disease

A 25 year old man developed progressive pneumonia which is responding poorly to amoxycillin. Methenamine silver staining of his sputum showed small circular cysts. Giemsa staining demonstrated small, punctate nuclei of trophozoites and intracystic sporozoite.

*Which is the likely organism?*

- 1- Mycobacterium tuberculosis
- 2- Leishmania donovani
- 3- Pneumocystis carinii
- 4- Toxoplasma gondii
- 5- Trypanosoma cruzi

Answer & Comments

Answer: 3- Pneumocystis carinii

Pneumocystis carinii may be identified on microscopy after

(a) methenamine silver staining which shows a cystic phase of the organism

(b) Giemsa staining which demonstrates sporozoites and trophozoites with small, punctate nuclei.



[ Q: 691 ] MRCPass - Infectious disease

A 75 year old woman presents with a Two day history of confusion. She had complained to her husband of a headache and neck stiffness. A lumbar puncture was performed. CSF microscopy revealed:

WBC 650 cells/mL (< 5)

90% neutrophils

A few Gram positive diplococci on staining

*What is the likely cause of her meningitis?*

- 1- Listeria monocytogenes
- 2- Streptococcus pneumoniae

3- Neisseria meningitidis

4- HIV

5- Herpes simplex

Answer & Comments

Answer: 2- Streptococcus pneumoniae

Streptococci are gram positive cocci. Pneumococcal meningitis is commoner in older patients. Neisseria meningitidis are gram negative diplococci, whilst listeria monocytogenes is a small gram positive bacillus.



[ Q: 692 ] MRCPass - Infectious disease

A 42 year old lady presented with cough, shortness of breath and confusion. She was admitted to hospital with a diagnosis of pneumonia. Pulse oximetry showed an oxygen saturation of 86 percent on air. Her chest x-ray showed increased markings at the base of the right lung.

A sputum culture grew normal flora, and Two blood cultures showed no growth. Paired sera taken on showed raised antibody titres to Chlamydia antigens (from <1:10 to 1:320).

*What is the diagnosis?*

- 1- Mycoplasma pneumoniae
- 2- Legionaire's disease
- 3- Byssinosis
- 4- Psittacosis
- 5- Pulmonary eosinophilia

Answer & Comments

Answer: 4- Psittacosis

Psittacosis is caused by chlamydia psittaci. It is spread by all sorts of birds, not just pigeons or parrots. Children are less predisposed than adults to the disease. The disease does spread from person to person. Treatment is with tetracycline.



[ Q: 693 ] MRCPass - Infectious disease

A 45 year old lady is being vaccinated following a recent relative being diagnosed with meningitis.

*Vaccines exist in the UK for which major groups of meningococcus?*

- 1- B
- 2- A and C
- 3- B and C
- 4- A and B
- 5- A, B and C

Answer & Comments

Answer: 2- A and C

The vaccine for A has been used for travellers for some years, and the vaccine for C has been introduced more recently for high risk groups.



[ Q: 694 ] MRCPass - Infectious disease

A 18 year old student is admitted with a history of headaches, lethargy, anorexia and vomiting of a few weeks duration. She had 2 witnessed seizures. Over the last few months she has been treated for oral thrush.

On examination she is febrile, drowsy and she has neck stiffness. CT scan of her head is unremarkable.

CSF shows:

White cells 80 /ml (65% lymphocyte, 35 % polymorphs)

Protein 1.2g/L

Glucose 2.5 mmol/L

*Which organism is the likely cause of the condition?*

- 1- Meningococcus
- 2- Streptococcus
- 3- Cryptococcus neoformans

- 4- Herpes simplex virus
- 5- Mycobacterium tuberculosis

Answer & Comments

Answer: 3- Cryptococcus neoformans

The patient has chronic meningitis with raised CSF lymphocytosis.

Immunosuppression is suggested by oral candidiasis. The likely cause is cryptococcal meningitis.



[ Q: 695 ] MRCPass - Infectious disease

A 40 year old man has symptoms of diplopia, dysphagia and dysarthria. After 12 hours he develops weakness of his arms but remains afebrile and is alert.

Following this, in the next 12 hours, he deteriorates to the extent of requiring artificial ventilation.

*What is the likely diagnosis?*

- 1- Diphtheria
- 2- Polio
- 3- Strychnine poisoning
- 4- Tetanus
- 5- Botulism

Answer & Comments

Answer: 5- Botulism

Botulism typically produces a descending paralysis which starts with diplopia or blurred vision due to difficulty with accommodation and progresses to weakness of the neck, arms and respiratory muscles. Botulism is caused by the neurotoxins of *Clostridium botulinum* and in rare cases, *Clostridium butyricum* and *Clostridium baratii*. These gram-positive spore-forming anaerobes can be found in soil samples and marine sediments throughout the world. Therapy consists of approximately 10,000 IU of antibodies against toxin types A,



B, and E to neutralize serum toxin concentrations, and also supportive care (e.g. ventilation).

Tetanus and strychnine poisoning both produce muscle spasm which may lead to respiratory failure but not muscle weakness.



[ Q: 696 ] MRCPass - Infectious disease

A 35 year old secretary returns from Mumbai in India following a 2 week holiday. He had headaches, arthralgia, myalgia, diarrhoea/constipation and was mildly confused. Malarial film was negative.

*What is the likely diagnosis?*

- 1- HIV
- 2- Syphilis
- 3- Schistosomiasis
- 4- Plasmodium ovale malaria
- 5- Typhoid fever

#### Answer & Comments

Answer: 5- Typhoid fever

Headaches, arthralgia, myalgia, diarrhoea/constipation and confusion or delirium can occur in typhoid fever (caused by *S. typhi*) which should be suspected in travellers with pyrexia. Jaundice does not occur.



Salmonella typhi



[ Q: 697 ] MRCPass - Infectious disease

A 22 year old man who is asymptomatic has been referred by the GP for investigation of lymphadenopathy.

On examination, he has palpable cervical lymph nodes. The Chest X ray is normal.

*Which one of the following tests should be done?*

- 1- Fine needle aspiration and cytology
- 2- Excision biopsy
- 3- CT scan of the head and neck
- 4- Bone marrow biopsy
- 5- Genetic karyotyping

#### Answer & Comments

Answer: 1- Fine needle aspiration and cytology

As the patient is asymptomatic, there is little clue towards a diagnosis. A needle aspiration and cytology is essential to exclude lymphoma / carcinoma / TB. Other possible causes are infection e.g. HIV or infectious mononucleosis.



[ Q: 698 ] MRCPass - Infectious disease

A 40 year old man presented to hospital with fever, intermittent rigors and lethargy. He had returned from a holiday to West Africa six months previously.

*What is the likely diagnosis?*

- 1- Plasmodium falciparum malaria
- 2- Plasmodium ovale malaria
- 3- Typhoid fever
- 4- Brucellosis
- 5- Leishmaniasis

#### Answer & Comments

Answer: 2- Plasmodium ovale malaria

Plasmodium ovale malaria and its cyclic paroxysms occur every 48 hours (tertian fever). Plasmodium ovale is the rarest of the four species and is apparently more restricted in distribution.

However, it is common in the West African countries of Ghana, Liberia, and Nigeria.



[ Q: 699 ] MRCPass - Infectious disease

A 25 year old veterinarian presents with a 2 week history of high fevers, night sweats, dry cough, and myalgia.

He had no medical history and was taking no regular drug treatment. A travel and occupational history showed that he had lived and worked as a vet in northern India until 6 months ago, when he moved to London.

On examination, the patient had a fever of 38.5°C, a solitary cervical lymph node measuring 1 cm x 0.5 cm in size, and a palpable splenic tip.

Initial investigations showed a CRP of 84 U/l and white cell count of  $4.8 \times 10^9/L$ . Three blood films for malaria parasites were negative. Standard liver function tests showed a raised serum alkaline phosphatase concentration of 520 U/l, a raised (gamma)-glutamyltransferase concentration of 450 U/l, and a raised serum aspartate aminotransferase concentration of 248 U/l; the serum bilirubin concentration was at the upper end of the normal range, at 18  $\mu\text{mol/l}$ . The serum angiotensin converting enzyme concentration was also raised, at 113 U/l.

*Which one of the following tests is most likely to yield the diagnosis?*

- 1- Chlamydia serology
- 2- Mycoplasma serology
- 3- Brucella serology
- 4- Legionella serology
- 5- Paul bunnell test

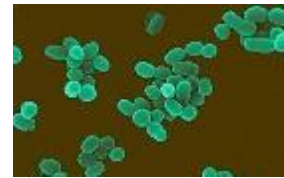
### Answer & Comments

Answer: 3- Brucella serology

The occupation suggests that the patient had worked with animals e.g. cattle. Brucella is transmitted through milk and meat, especially in abattoirs. The commonest cause is Brucella melitensis. Detection of brucella may require extended culture of 6 weeks and blood agar plates. Detection of Brucella agglutinins (with the Coomb's test) also helps confirm the diagnosis.

Fever and rigors, followed by possible osteomyelitis, polyarthrits, endocarditis, pneumonia, hepatitis/jaundice, splenic abscess, meningitis/encephalitis, skin changes, orchitis/cervicitis and retinitis.

Past infection causes positive serology and does not necessarily indicate active infection. Tetracycline and gentamicin are treatments of choice (better intracellular penetration).



Brucella melitensis - Gram-negative, aerobic, coccobacillus



[ Q: 700 ] MRCPass - Infectious disease

A 31-year-old white male presented to a general practitioner with a two-day history of fever, headaches, generalised aches and pains, lethargy and loss of appetite. He had travelled to Papua New Guinea 2 months ago.

A full blood count showed: lymphocytes,  $0.71 \times 10^9/L$ ; neutrophils,  $1.95 \times 10^9/L$ ; and platelets,  $33 \times 10^9/L$ ; normal,  $150-450 \times 10^9/L$ . Haemoglobin concentration was in the normal range. Blood film shows schizonts.

*Which one of the following is the most likely organism?*

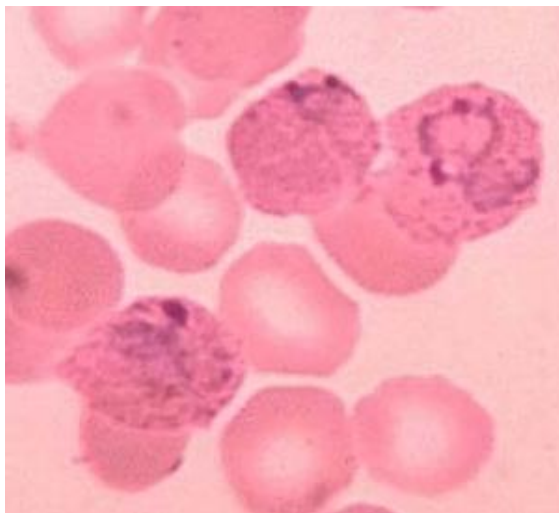
- 1- Schistosoma

- 2- Mycobacterium tuberculosis
- 3- Pasteurella
- 4- Plasmodium vivax
- 5- Leptospira

#### Answer & Comments

**Answer:** 4- Plasmodium vivax

The history and FBC count is most consistent with malaria. In this case, vivax malaria.



Plasmodium vivax trophozoites



[ Q: 701 ] MRCPass - Infectious disease

During routine medical evaluation, a 30 year old man was found to have abnormal liver tests. A history failed to identify a clinically recognized, past episode of acute hepatitis. The patient had never received a blood transfusion. He had not used injection drugs. He had had unprotected sexual encounters with multiple partners over several years.

On physical examination, he had no signs of chronic liver disease. On receiving the following results from the laboratory, the GP referred him to a liver specialist.

Laboratory Results:

ALT: 180

AST: 140 IU

Bilirubin: 15 umol/l

Alkaline phosphatase: 120 U/l

HbsAg positive

IgG anti-HBc positive

HbeAg positive

HBV DNA  $1.5 \times 10^7$  copies/ml

A liver biopsy showed moderately active hepatitis with a necroinflammatory histologic activity index score of 10/18 and a fibrosis score of 3/6.

**What should be done?**

- 1- Commence interferon alpha
- 2- Commence prednisolone
- 3- Commence ribavirin
- 4- Observation for several months
- 5- Refer for liver transplant

#### Answer & Comments

**Answer:** 4- Observation for several months

A case of hepatitis B with mildly deranged liver function tests. There are signs of hepatitis which are mild, and the liver function tests are not significantly deranged, hence observation of inflammatory activity is recommended.



[ Q: 702 ] MRCPass - Infectious disease

A 35 year old man is very unwell. He has had a headache for 2 weeks and this is now associated with neck stiffness and photophobia. On examination, he has temperature of  $38.5^{\circ}\text{C}$ , white lesions on the tongue and axillary lymphadenopathy. Fundoscopy is normal. CXR was normal. An enhanced CT head scan is also normal.

Blood tests show lymphopenia.

**What is the most likely diagnosis?**

- 1- Secondary syphilis
- 2- Herpes simplex encephalitis
- 3- Cerebral toxoplasmosis

4- Disseminated candidal infection

5- Cryptococcal meningitis

### Answer & Comments

Answer: 5- Cryptococcal meningitis

Lymphopenia suggests HIV infection and this patient also has candidal infection in the oral cavity suggesting immunodeficiency. Hence cryptococcal meningitis (which usually presents in an indolent manner) is the most appropriate answer.



[ Q: 703 ] MRCPass - Infectious disease

A 22 year old man had been to a Greek island on holiday 2 months ago. He presented with a 2-week history of dry cough, diarrhoea, lethargy, anorexia and fever. He had a past history of cutaneous vasculitis of uncertain aetiology. He was not taking any regular medication.

On examination, the patient's temperature was 37.5°C, but no other abnormalities were evident. Investigations showed that he had pancytopenia, raised erythrocyte sedimentation rate and hypergammaglobulinaemia.

A second bone marrow biopsy at this time revealed occasional macrophages containing amastigotes. Further history revealed that he had been bitten by sandflies.

*What is the diagnosis?*

- 1- Schistosomiasis
- 2- Cutaneous leishmaniasis
- 3- Visceral leishmaniasis
- 4- Malaria
- 5- Dengue fever

### Answer & Comments

Answer: 3- Visceral leishmaniasis

The major clinical syndromes caused by the genus *Leishmania* are cutaneous, mucosal and visceral leishmaniasis. Leishmaniasis is transmitted by *Phlebotomus* or *Lutzomyia* sandflies and infects dogs and foxes as well as humans.

Visceral leishmaniasis is caused by *Leishmania donovani*, *L. infantum* or *L. chagasi*.

The incubation period of visceral leishmaniasis is usually 2-8 months. Many infections are subclinical, but the classic presentation is with fever, weight loss, hepatosplenomegaly, pancytopenia and hypergammaglobulinaemia.

The definitive diagnosis depends on demonstrating either amastigotes in tissue or promastigotes in culture. Splenic puncture is the most sensitive means of obtaining a diagnosis, but biopsy of the bone marrow and liver is almost as good.

Pentavalent antimony compounds have been used to treat leishmaniasis for decades, but often have severe side effects, and resistance is developing. Amphotericin can achieve 98% long-term cure in both antimonialunresponsive and previously untreated patients.



[ Q: 704 ] MRCPass - Infectious disease

A 33 year man chronic hepatitis C admitted general deterioration. He missed many of his previous outpatient appointments currently receiving any treatment. On examination he had a temperature of 38°C, and was jaundiced.

His blood tests were:

Hb 12.0 g/dl

MCV 90 fl

WCC  $9 \times 10^9/L$

platelets  $180 \times 10^9/L$

urea 25  $\mu\text{mol/l}$

creatinine 340  $\mu\text{mol/l}$

sodium 138 mmol/l  
 potassium 3.5 mmol/l  
 bilirubin 60 µmol/l  
 AST 85 U/l  
 ALP 350 U/l  
 albumin 32 g/l  
 CRP 110 mg/l

*Which of the following is likely?*

- 1- Hepatocellular carcinoma
- 2- Acute liver decompensation
- 3- Hepatorenal syndrome
- 4- Superimposed HIV infection
- 5- Hepatitis delta infection

#### Answer & Comments

Answer: 3- Hepatorenal syndrome

The deranged LFTs and also impaired renal function suggests hepatorenal syndrome. Hepatitis delta (HepD) infection is superimposed with Hepatitis B infection.



[ Q: 705 ] MRCPass - Infectious disease

A 19 year old female has a several day history of urethral discharge. Mid stream urine is negative. A swab was sent but no organisms were grown.

*Which one of the following should be prescribed?*

- 1- Penicillin V
- 2- Trimethoprim
- 3- Metronidazole
- 4- Doxycycline
- 5- Ciprofloxacin

#### Answer & Comments

Answer: 4- Doxycycline

The diagnosis is non gonococcal urethritis. This is commonly due to Chlamydia. Treatment of choice is doxycycline.



[ Q: 706 ] MRCPass - Infectious disease

A 30 year old man presents to your office after passing something he thought was a rubberband in his stool. He was worried when he saw the object moving in the toilet. He is otherwise healthy and is taking no medications. He has had no recent changes in bowel habits or stool appearance. He denies fever, abdominal pain, cough, or rash.

*What is the likely diagnosis?*

- 1- Hookworm
- 2- Schistosomiasis
- 3- Ascariasis
- 4- Leishmaniasis
- 5- Echinococcus

#### Answer & Comments

Answer: 3- Ascariasis

*Ascaris lumbricoides* is roundworm which infects the ileum and may cause GI symptoms. It also causes pneumonitis and bronchospasm when the larvae migrate via the bloodstream to the alveoli. Once mature they crawl back up the bronchi into the gut. Mebendazole, 100 mg orally twice daily for 3 days or 500 mg orally once, is the treatment of choice.



*Ascaris lumbricoides*



[ Q: 707 ] MRCPass - Infectious disease

A 40 year old single man returned from holiday in Europe with bloody diarrhoea which had lasted for Two weeks.

He had lost 1 kg in weight, and has occasional low er abdominal cramping discomfort. He also has a painful swelling in his right elbow.

*Which is the likely cause?*

- 1- Bacillus cereus
- 2- E coli diarrhoea
- 3- Gonococcal septicaemia
- 4- Amoebiasis
- 5- Campylobacter infection

Answer & Comments

Answer: 5- Campylobacter infection

Reactive arthritis, which is the likely cause of elbow swelling in this case, can develop following infection with Shigella, Salmonella, Campylobacter and Yersinia. All these organisms are common in travel to Europe or North Africa

Campylobacter infection is one of the commonest causes of inflammatory diarrhoea. Abdominal pain is often a prominent feature of the illness, frequently at the right iliac fossa. The diarrhoea is often bloody. Symptoms last for a week typically.

E coli diarrhoea is less likely to be associated with a reactive arthritis.



[ Q: 708 ] MRCPass - Infectious disease

A 62 year old lady presents with fever and persistent difficulty in speaking. Her signs show a temperature of 39°C. The patient was alert and oriented with respect to time but unable to name objects properly. Dysarthria and occasional word substitution were noted.

The patient followed Two but not three-step commands.

A provisional diagnosis of an aphasic temporal lobe lesion was made. A CT scan showed a low attenuation lesion involving the medial and posterior aspect of the left temporal lobe and inferior basal ganglia.

*Which of the following is likely?*

- 1- Polymorpho leukoencephalopathy
- 2- Cerebral toxoplasmosis
- 3- Herpes simplex encephalitis
- 4- Multiple sclerosis
- 5- Meningococcal meningitis

Answer & Comments

Answer: 3- Herpes simplex encephalitis

Herpes simplex viruses (HSV-1 and HSV-2) produce a variety of infections involving mucocutaneous surfaces, the CNS, and occasionally visceral organs. HSV encephalitis is the most common identified cause of acute, sporadic viral encephalitis. Clinically, HSV encephalitis presents with acute onset of fever and focal neurology, especially temporal lobe signs.



[ Q: 709 ] MRCPass - Infectious disease

A 18 year old man was admitted to the emergency room due to fever, headache, vomiting, irritability, and myalgia that had begun 24 hours ago. There was no evidence of previous infection in the upper airways. On examination, the patient was lethargic, disoriented and hypotensive, with petechiae in the legs and upper limbs, and he had conjunctival suffusion.

Cerebrospinal fluid (CSF) was turbid, with 5300 cells/ mm<sup>3</sup> (97% neutrophils and 3% monocytes) and protein was 0.9 (<0.5).

*What is the treatment of choice?*

- 1- Erythromycin



- 2- Gentamicin
- 3- Ceftriaxone
- 4- Metronidazole
- 5- Hydrocortisone

#### Answer & Comments

**Answer:** 3- Ceftriaxone

The patient has meningococcal meningitis (suggested by the purpuric rash). Until the organism (*Neisseria meningitidis*) is isolated and sensitivities tested, the patient should be on a cephalosporin or benzylpenicillin.



Meningococcal Rash



[ Q: 710 ] MRCPass - Infectious disease

A 25 year old lady presents to A&E with a 3 day history of headache and fever. On examination, she has neck stiffness and a fever but no rash or focal neurology. She is given IV ceftriaxone and a lumbar puncture is performed.

CSF analysis shows:

Protein 0.35 g/L

Glucose 2/3 of plasma level

Microscopy shows 250 white cells, predominantly lymphocytes

**The most likely diagnosis is:**

- 1- Listeria meningitis
- 2- Herpes simplex meningitis
- 3- Tuberculous meningitis
- 4- Meningococcal meningitis

- 5- Enteroviral meningitis

#### Answer & Comments

**Answer:** 5- Enteroviral meningitis

The CSF is suggestive of a viral as opposed to a bacterial meningitis.

Enteroviruses are the commonest cause of viral meningitis. The next best option would be herpes simplex meningitis.



[ Q: 711 ] MRCPass - Infectious disease

A 30 year old Turkish woman arrived in the UK with a 6 month history of weight loss and intermittent fevers. On examination, the patient was febrile, an enlarged liver and spleen were palpable.

Investigations revealed:

Haemoglobin 7.7 g/dL

White cell count  $2.7 \times 10^9/L$

Platelet count  $95 \times 10^9/L$

Thick and thin films showed no malarial parasites

**What is the likely diagnosis?**

- 1- Kawasaki's disease
- 2- Falciparum malaria
- 3- Visceral leishmaniasis
- 4- HIV infection
- 5- Tuberculosis

#### Answer & Comments

**Answer:** 3- Visceral leishmaniasis

The causative agent of visceral leishmaniasis is *Leishmania donovani*.

Fever, malaise, anaemia, weakness and weight loss are common presenting symptoms and signs.

Hepatosplenomegaly develops gradually and also the skin develops a grey colour, giving rise to the Indian name of the disease -'kala azar' - meaning black fever.



[ Q: 712 ] MRCPass - Infectious disease

A 35 year old man is admitted with a 5 day history of fever, cough and lethargy.

On examination, he was pyrexial and had signs consistent with a left lower lobe pneumonia.

*In considering antibiotics for pneumonias, which one of the following microorganisms is sensitive to Benzylpenicillin?*

- 1- Klebsiella
- 2- Mycoplasma pneumoniae
- 3- Aspergillus fumigatus
- 4- Streptococcus Pneumoniae
- 5- Legionella pneumophila

#### Answer & Comments

Answer: 4- Streptococcus Pneumoniae

Penicillin is mainly useful for Group A and Group B Streptococci, meningococcal and pneumococcal infections. Strep pneumonia is one of the commonest organisms causing community acquired bacterial pneumonia.



[ Q: 713 ] MRCPass - Infectious disease

A 45 year old woman develops a progressive, ascending motor weakness over several days. 1 week ago she had been non specifically unwell with fevers, diarrhoea and a dry cough. Neurological examination revealed peripheral lower motor neuron weakness and also sensory loss to pain and touch.

She required intubation and ventilation following rapid deterioration from admission. A CT scan of her brain is normal. A lumbar puncture is performed. The opening pressure was normal. There was clear, colorless CSF,

increased protein of 1.2 mg/dL, cell count of 5 (all lymphocytes). She gradually recovers over the next month.

*Which of the following conditions is likely to have preceded the onset of her illness?*

- 1- Staphylococcus sepsis
- 2- CLL
- 3- Campylobacter infection
- 4- Folate deficiency
- 5- Behcet's syndrome

#### Answer & Comments

Answer: 3- Campylobacter infection

The overall diagnosis is Guillain Barre syndrome, which causes peripheral sensorimotor neuropathy which is ascending. In about half of all cases the onset of the syndrome follows a viral or bacterial infection, such as the following:

flu

gastrointestinal viral infection

infectious mononucleosis

viral hepatitis

campylobacter

porphyria

An elevated level of protein in the CSF is characteristic of GBS. Nerve conduction studies may show changes consistent with demyelination.



[ Q: 714 ] MRCPass - Infectious disease

An 78 year old presents with confusion associated with a chest infection. 4 days later she developed green, then bloody diarrhoea.

*Which of following organisms is likely to cause the diarrhoea?*

- 1- Methicillin resistant Staphylococcus aureus

- 2- Salmonella
- 3- Clostridium difficile
- 4- Escherichia coli 0157
- 5- Campylobacter jejuni

#### Answer & Comments

**Answer:** 3- Clostridium difficile

This is a clinical scenario of Clostridium infection causing pseudomembranous colitis predisposed to by prior treatment broad spectrum antibiotics such as cefuroxime or augmentin.



[ Q: 715 ] MRCPass - Infectious disease

A 25 year old man presented to the hospital 10 days after returning from a six month visit to Pakistan. He had complained of fever, rigors and headache. On examination he was febrile (38°C) and his abdomen was tender in the right upper quadrant.

Investigations showed:

Hb 10.0 g/dL

WBC  $14.5 \times 10^9/L$

Neutrophils  $12.5 \times 10^9/L$

Platelets  $370 \times 10^9/L$

Blood film - No malaria parasites seen

Alk Phos 480 iU/L

AST 60 iU/L

CRP 110 mg/L

Stool culture Negative

Chest xray: Small right pleural effusion

*Which of the following investigations would be of diagnostic value?*

- 1- OGD
- 2- Typhoid serology
- 3- Ultrasound scan of the liver
- 4- Blood cultures

- 5- Stool for ova, cysts and parasites

#### Answer & Comments

**Answer:** 3- Ultrasound scan of the liver

The presenting features of RUQ pain and pyrexia suggests a possible amoebic liver abscess, hence an ultrasound of the liver to look for it (this may be amenable to aspiration and would confirm the diagnosis). Amoebic cysts may also be found in the stool, microscopy would be the next test to be done.



[ Q: 716 ] MRCPass - Infectious disease

A 17 year old Sudanese boy was evaluated for generalized pruritus and an eruption on his legs. He complained of episodic decreased visual acuity and eye pain every few months. He denied fever, weight loss, or lethargy, and his medical history was otherwise unremarkable.

A skin examination revealed diffuse xerosis and lichenified, asteatotic patches distributed over the knees and pretibia and on the dorsal aspect of the feet. The affected skin was shiny and atrophic in areas. There were also subtle hypopigmented, xerotic patches over the buttocks.

The peripheral blood cell count was normal except for 30% eosinophilia (normal, <5.5%). The eye examination (slitlamp and indirect ophthalmoscopy) showed bilateral corneal infiltrates.

*What is the likely diagnosis?*

- 1- Babesiosis
- 2- Trypanosomiasis
- 3- Onchocerciasis
- 4- Yellow fever
- 5- Herpes simplex infection

#### Answer & Comments

**Answer:** 3- Onchocerciasis

Onchocerciasis (river blindness) is a common, chronic, multisystemic disease caused by the nematode *Onchocerca volvulus*. The disease characteristically includes dermatologic, lymphatic, ophthalmologic, and systemic manifestations. Human transmission of the disease is caused by a bite from the intermediate host, the black fly (genus *Simulium*). Treatment is with ivermectin.



Leopard-spot pattern of depigmentation on the shins in onchocerciasis



[ Q: 717 ] MRCPass - Infectious disease

A 38 year old woman has just returned from a 2 month holiday in East Africa. She mentions that she had been swimming in fresh water. She now has fevers, breathlessness and is wheezy.

On examination, she has a generalized rash and palpable hepatosplenomegaly.

Her investigations show : Hb 12.5 g/dl, WCC  $14.5 \times 10^9/L$ , platelet count  $190 \times 10^9/L$ . Thick and thin malarial films are negative.

*What is the likely diagnosis?*

- 1- Schistosomiasis
- 2- Ankylostoma infection
- 3- Leishmaniasis
- 4- Amoebiasis
- 5- Infectious mononucleosis

### Answer & Comments

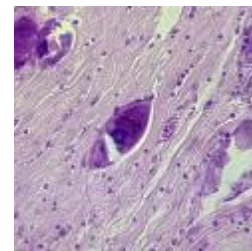
Answer: 1- Schistosomiasis

Acute schistosomiasis can cause fevers, an urticarial rash, diarrhoea, hepatosplenomegaly (Katayama fever).

The clue here is swimming. The larvae of *Schistosoma* (known as cercariae) breed in snails and are present in rivers and lakes. They can penetrate human skin, and from there on can migrate to organs such as lung or liver.

A rash known as 'swimmer's itch' or cercarial dermatitis can occur. Pulmonary involvement can lead to wheeze and breathlessness.

Leishmaniasis is spread by sandflies - there may be hepatosplenomegaly, but there is usually no pulmonary involvement.



Schistosomal egg from a tissue biopsy



[ Q: 718 ] MRCPass - Infectious disease

A 22 year old man presents with pus discharging from the urethra. Microscopy of a sample of the pus showed neutrophils. There were no organisms seen on gram stain.

*Which of the following organisms is most likely?*

- 1- *Ureaplasma urealyticum*
- 2- *Chlamydia trachomatis*
- 3- *Trichomonas vaginalis*
- 4- Candidiasis
- 5- *Neisseria gonorrhoeae*

## Answer &amp; Comments

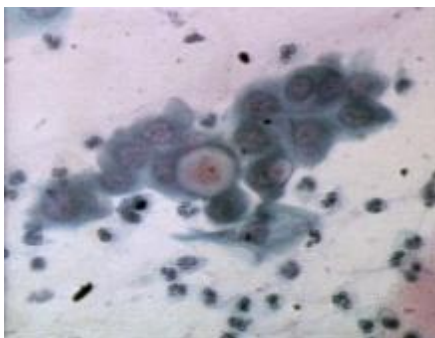
**Answer:** 2- Chlamydia trachomatis

A patient who presents with urethral discharge has either gonococcal or non-gonococcal urethritis (NGU). Since there were no gram negative diplococci seen on microscopy, it is NGU.

The organism are as follows:

- Chlamydia trachomatis 40%
- Ureaplasma urealyticum 20-40%
- Trichomonas vaginalis (rare) < 2%
- Candidiasis (rare) < 2%
- Herpes simplex (rare) < 2%

The most common organism is Chlamydia and hence the best answer.



Chlamydia inclusions (intracellular parasites)



[ Q: 719 ] MRCPass - Infectious disease

A 32 year old woman presents with a fever, headache, cough, malaise and arthralgia. On examination she has a widespread maculopapular rash but no other findings. CXR is normal.

Investigations show : Hb 13.6 g/dl, WCC  $11 \times 10^9/L$ , platelets  $220 \times 10^9/L$ , sodium 138 mmol/l, potassium 4.5 mmol/l, urea 5  $\mu\text{mol/l}$ , creatinine 110  $\mu\text{mol/l}$ , CRP 115.

Cold agglutinin IgM antibody 1:64

FT-Antibodies negative

VDRL serology positive

**What is the most likely diagnosis?**

- 1- Primary Syphilis
- 2- Infectious mononucleosis
- 3- Mycoplasma pneumonia
- 4- Wegener's granulomatosis
- 5- Parvovirus B19 infection

## Answer &amp; Comments

**Answer:** 3- Mycoplasma pneumonia

Parvovirus B19 infection is unlikely with the high CRP and syphilis is unlikely due to the negative FTA-Antibodies. Mycoplasma infection is a recognised cause of false positive VDRL. Cold agglutinins also suggest M. pneumonia IgM antibodies.



[ Q: 720 ] MRCPass - Infectious disease

A group of holiday makers have been to the river Nile on a cruise holiday in Egypt. Many of the tourists develop bloody diarrhoea a few days later.

**What is the likely organism?**

- 1- Cryptosporidium
- 2- Entamoeba Histolytica
- 3- Shigella sonnei
- 4- Mycobacterium bovis
- 5- Giardia Lamblia

## Answer &amp; Comments

**Answer:** 3- Shigella sonnei

This is a smallprint fact but there is a past year question based on travel to the Nile.

Salmonella, campylobacter and shigella are common causes of bloody diarrhoea among people travelling in the region of Nile River Delta of Egypt. E coli is also a cause of diarrhoea, but not typically bloody.



Shigella are non-motile gram-negative bacilli that can cause diarrheal illness in humans. Symptoms of a Shigella infection include diarrhoea, fever, and abdominal cramps that begin 24 to 48 hours after exposure. The diarrhoea is often bloody.



[ Q: 721 ] MRCPass - Infectious disease

A 65 year old man had been on holiday to Arizona in the United States 6 weeks ago. He was brought to hospital with high fever, rigors, malaise, and mild confusion. He had a generalised, non-pruritic maculopapular rash, predominantly on the trunk but also on the extremities, including the palms and soles. There was no history of animal or arthropod exposure, but his house was on the edge of forest.

*What is the most likely diagnosis?*

- 1- Falciparum malaria
- 2- Rickettsial spotted fever
- 3- Tuberculosis
- 4- Allergic bronchopulmonary aspergillosis
- 5- Schistosomiasis

#### Answer & Comments

**Answer:** 2- Rickettsial spotted fever

Rocky Mountain or Rickettsial spotted fever (RMSF), classically characterized by fever, myalgias, headache, and a petechial rash, is the most common tick-borne disease in the United States. It is also found in Mexico and South America, southern Africa, and Asia.

Recommended treatment is doxycycline.



Maculopapular rash due to Rickettsial disease



[ Q: 722 ] MRCPass - Infectious disease

A 35 year old man presented to hospital with a 7 day history of progressive severe thoracic back pain and a 5 day history of left knee pain. The back pain had occurred suddenly after lifting weights, and radiated to the right chest wall. His family history in relation to rheumatological or inflammatory disorders was unremarkable, and he had never used intravenous drugs. He had no symptoms of fever, conjunctivitis, urethritis, rash, early morning joint stiffness or neurological dysfunction.

On initial examination he looked well but had a slightly raised temperature (37.8°C). There was tenderness over the fifth to the seventh thoracic vertebrae, and his left tibiofibular joint was erythematous and warm.

Initial investigations revealed a neutrophil leukocytosis of  $9.5 \times 10^9/L$  ( $1.7-7.0 \times 10^9/L$ ) and raised C-reactive protein, 73 mg/L ( $< 3$  mg/L) and erythrocyte sedimentation rate, 47 mm/h (0-10 mm/h). An MRI scan showed epidural abscess.

*What is the most likely organism?*

- 1- Streptococcus pyogenes
- 2- Staphylococcus aureus
- 3- Pasteurella multocida
- 4- Enterococcus faecalis
- 5- E coli



## Answer &amp; Comments

**Answer:** 2- Staphylococcus aureus

Epidural abscesses are most commonly caused by staph aureus. Patients typically present with either a triad of tenosynovitis, dermatitis and polyarthralgia without purulent arthritis, or purulent arthritis without skin lesions. For the investigation of symptoms of localised back pain and fever, magnetic resonance imaging is the investigation of choice.



[ Q: 723 ] MRCPass - Infectious disease

A 30 year old woman presents with a Two week history of severe headache, myalgia and a red maculopapular rash. She had returned from Malaysia a week ago, where she mentions she had been bitten by mosquitoes.

On examination his blood pressure was 80/45 mmHg. A diagnosis of dengue fever was likely.

*Which of following is the best treatment option?*

- 1- Intravenous hydrocortisone
- 2- Intravenous fluids
- 3- Intravenous artemisinin
- 4- Ribavirin
- 5- Intravenous aciclovir

## Answer &amp; Comments

**Answer:** 2- Intravenous fluids

The treatment for Dengue fever is supportive treatment with intravenous fluids (either crystalloids or colloids). Steroids and antiviral drugs have not been proven effective. Artemisinin (Chinese wormwood) is used to treat malaria.



[ Q: 724 ] MRCPass - Infectious disease

An 18 year old boy has recently been to Pakistan. He now presents to hospital with a

7-day history of a high fever and vomiting. He had a soft palpable spleen. His total leukocyte count was  $3 \times 10^9/L$ . Malarial parasites were not seen on examination of thin and thick smears of peripheral blood.

The results of a routine urinalysis and chest x rays were normal. A blood Widal test showed a titer of 320 against "O" (somatic) antigen of Salmonella enterica serovar Typhi. Blood culture yielded the growth of Salmonella Typhi.

*What should he be treated with?*

- 1- Amoxycillin
- 2- Metronidazole
- 3- Ciprofloxacin
- 4- Tetracycline
- 5- Gentamicin

## Answer &amp; Comments

**Answer:** 3- Ciprofloxacin

This a case of typhoid fever. The non blanching macular rash is known as 'Rose Spots'.

Fluoroquinolones such as ciprofloxacin are the most effective antimicrobial agents for treating enteric fevers.



Rose Spots



[ Q: 725 ] MRCPass - Infectious disease

A previously healthy 50 year old man has recently been to the Amazon on a jungle trekking trip. He returns with a 4-day history of crampy abdominal pain and a 1-day history

of fever of 39.3°C and severe headache. He mentions he was bitten by mosquitoes frequently during the trip.

On admission, physical examination revealed an ill-appearing man. Laboratory tests documented leukopenia, anemia (hemoglobin 10.5 g/dL), thrombocytopenia, abnormal coagulation (INR 6.5), renal failure and deranged liver function (AST: 13,700 U/L [normal: 15-37 U/L]).

Malarial film and rickettsial serology were negative.

*What diagnosis should be considered?*

- 1- Chagas disease
- 2- Malaria
- 3- Yellow fever
- 4- Visceral leishmaniasis
- 5- Schistosomiasis

#### Answer & Comments

Answer: 3- Yellow fever

Yellow fever (YF) is a mosquito-borne viral disease. Although no specific treatment exists for YF and the case-fatality rate for severe YF is approximately 20%, an effective vaccine is available. Symptoms are of sudden onset of fever, bradycardia and headache. Severe cases progress to intense albuminuria, jaundice, and hemorrhage.



[ Q: 726 ] MRCPass - Infectious disease

A 65 year old woman has leg cellulitis which is not responding to antibiotics. Would swab now grow MRSA.

*Which would be the best antibiotic regime to use in a patient who has spreading methicillin-resistant Staphylococcus aureus infection of a skin wound?*

- 1- Gentamicin
- 2- Doxycycline

- 3- Flucloxacillin
- 4- Rifampicin
- 5- Vancomycin

#### Answer & Comments

Answer: 5- Vancomycin

Vancomycin should be used first line for MRSA with rifampicin added for synergistic action. More recently, oral linezolid has also been shown to be effective.



[ Q: 727 ] MRCPass - Infectious disease

A 30 year old Mexican male presented with 3 weeks history of fever, malaise, nausea, vomiting and right upper quadrant pain. Bowels were regular with normal stools.

On abdominal examination, there was right upper quadrant tenderness without rigidity or guarding. There was no organomegaly, masses, or ascites and bowel sounds were normal.

Liver functions showed elevated alkaline phosphatase (152 IU/L) and a low albumin.

Abdominal CT scan showed a well-demarcated abscess in the right lobe of liver. Aspirate from the abscess is reddish brown in colour.

*What is the likely diagnosis?*

- 1- Tuberculous abscess
- 2- Malaria
- 3- Sarcoidosis
- 4- Schistosomiasis
- 5- Amoebic abscess

#### Answer & Comments

Answer: 5- Amoebic abscess

Amoebic liver abscess is caused by *Entamoeba histolytica*. The trophozoites reach the liver via portal circulation and block the small portal

radicles leading to inflammation and subsequent necrosis.

The abscess is commonly found in right lobe of liver. Aspirate from the abscess is reddish brown "anchovy sauce" and mainly consists of degenerate liver cells and blood.

The most common treatment of amebic liver abscess is - Metronidazole 750 mg t.i.d. for 5-10 days.



Amebic liver abscess in the right lobe of the liver



[ Q: 728 ] MRCPass - Infectious disease

A 70 year old man with chronic renal failure for which he receives regular haemodialysis treatment, is admitted with fever and lethargy. Blood cultures grow a vancomycin-resistant enterococcus (VRE).

*Which of the following drugs would be most suitable?*

- 1- Septrin
- 2- Meropenem
- 3- Enterocid
- 4- Linezolid
- 5- Vancomycin

#### Answer & Comments

Answer: 4- Linezolid

Vancomycin-resistant enterococci are an emerging problem in hospitals, where

extensive glycopeptide use may select for resistant strains. In noncomparative trials of treatment of VRE infections, quinupristin/dalfopristin and linezolid are effective. Some are teicoplanin sensitive.



[ Q: 729 ] MRCPass - Infectious disease

A 33 year old male presents with a history of dysuria, and penile discharge. He had unprotected sexual intercourse with a casual partner 3 days prior to the development of symptoms. An urethral swab is taken and on gram stain this shows numerous polymorphs with many intracellular gram-negative diplococci.

*The causative organism is:*

- 1- Treponema pallidum
- 2- Ureaplasma urealyticum
- 3- Neisseria gonorrhoeae
- 4- Chlamydia trachomatis
- 5- Trichomonas vaginalis

#### Answer & Comments

Answer: 3- Neisseria gonorrhoeae

The presence of gram-negative intracellular diplococci suggests the diagnosis is gonococcal urethritis. Non-gonococcal urethritis (NGU) may be due to Chlamydia trachomatis, Trichomonas vaginalis, Ureoplasma urealyticum, Mycoplasma genitalium and Bactroides spp.



[ Q: 730 ] MRCPass - Infectious disease

A 35 year old man has lymphopenia on his white cell differential count. He has been complaining of headaches over the last 6 weeks.

On examination, he has a temperature of 38.5 C and no focal neurological signs. A CT scan of

his brain showed a 5 cm ring enhancing lesion in the frontal lobe.

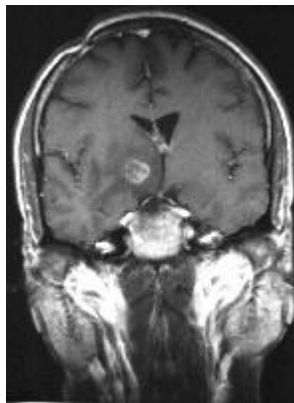
*Which of the following organisms is likely?*

- 1- Cryptosporidia
- 2- Toxoplasma gondii
- 3- Aspergillus
- 4- Cryptococcus neoformans
- 5- Mycobacterium avium intracellulare

#### Answer & Comments

**Answer:** 2- Toxoplasma gondii

The lymphopenia suggests HIV infection. Ring enhancing lesions in the brain suggest either cerebral toxoplasmosis or lymphoma.



Ring enhancing lesion in the Basal ganglia



[ Q: 731 ] MRCPass - Infectious disease

A 28 year old lady present with a solitary, crusted, thickened lesion on her leg 6 weeks after returning from a holiday in a suburban area in Sao Paulo, Brazil. She had no new sexual contact whilst there. She thinks she might have been bitten by some flies.

*What is the likely diagnosis?*

- 1- Cutaneous anthrax
- 2- Syphilis
- 3- Erysipelas
- 4- Onchocerciasis
- 5- Cutaneous leishmaniasis

#### Answer & Comments

**Answer:** 5- Cutaneous leishmaniasis

Cutaneous leishmaniasis can be caused by several Leishmania species, including L. braziliensis, L. mexicana and L. panamensis. It is spread by sandflies. The incubation period is variable, ranging from 2 weeks to several months.

Lesions usually occur on sunexposed areas. Diagnosis can be confirmed with biopsy demonstrating amastigotes.

Treatment is usually with pentavalent antimonial drugs (sodium stibogluconate).

Cutaneous anthrax is unlikely because it usually occurs in patients who have contact with meat, wool or hides e.g. veterinarians or farm workers. Cutaneous onchocerciasis is rare.



Cutaneous leishmaniasis: indolent, slow ly healing lesion



Sandfly



[ Q: 732 ] MRCPass - Infectious disease

A 38 year old woman has had multiple resections of the bow el on account of

recurrent Crohn's disease. This has resulted in intestinal failure and she is dependent on home parenteral nutrition. She has a central line inserted.

She presents with fever accompanied by chills and rigors. No physical signs are demonstrable. Cultures taken both centrally and peripherally demonstrate the presence of methicillin-sensitive *Staphylococcus aureus*.

*What should be done next?*

- 1- Treatment with intravenous vancomycin for 14 days
- 2- Treatment with intravenous gentamicin for 14 days
- 3- Treatment with intravenous teicoplanin for 14 days
- 4- Remove the intravenous line
- 5- 6 weeks of intravenous flucloxacillin and gentamicin

#### Answer & Comments

Answer: 4- Remove the intravenous line

Line infection with *Staphylococcus aureus* and *Candida* are absolute indications for line removal.



[ Q: 733 ] MRCPass - Infectious disease

A 2 year old girl presented with a 12-hour history of fever and poor feeding. The family owned two cats. Her temperature was 39.5°C, and she was irritable, with no localising signs or skin lesions. A full septic screen was performed. Cerebrospinal fluid (CSF) showed a neutrophilic pleocytosis and gram-negative coccobacilli. She was treated with intravenous cefotaxime and gentamicin. Within 24 hours both CSF and blood cultures showed growth of gram-negative bacilli.

*What is the likely infective organism?*

- 1- *Legionella pneumophila*
- 2- *Haemophilus influenzae*

- 3- *Pasteurella multocida*
- 4- *E coli*
- 5- *Pseudomonas aeruginosa*

#### Answer & Comments

Answer: 3- *Pasteurella multocida*

*Pasteurella multocida* is an oral commensal of domestic pets known to be an opportunistic human pathogen after traumatic animal contact. The most common infections in humans are skin and pulmonary infections.

*Pasteurella meningitis* occurs at extremes of age (infants), in the immunocompromised (associated with liver cirrhosis, renal disease and haematological malignancies) and after traumatic head injury.



[ Q: 734 ] MRCPass - Infectious disease

A 34 year old Turkish lady was admitted with fever for the past few weeks. On examination she was emaciated, with massive splenomegaly and hepatomegaly.

*What is the treatment of choice?*

- 1- Ciprofloxacin
- 2- Symptomatic treatment
- 3- Pentavalent antimonial
- 4- Quinine
- 5- Praziquantel

#### Answer & Comments

Answer: 3- Pentavalent antimonial

The features of leishmaniasis are:

fever

hepatosplenomegaly

pancytopenia

Leishmaniasis are widespread in most countries in the Mediterranean basin,



including Turkey. Treatment is with the pentavalent antimonial - Sodium stibogluconate.



[ Q: 735 ] MRCPass - Infectious disease

A 40 year old man who is HIV positive has been non compliant with antiretroviral medication. He presents with progressive (over 3 weeks) right sided upper and lower limb weakness. MRI scan of the brain shows multiple white matter lesions. CSF examination showed normal cell count and no organisms were seen. These lesions are non-enhancing.

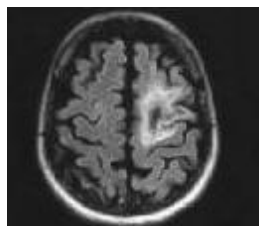
*Which one of the following is most likely?*

- 1- Tuberculous infection
- 2- Progressive multifocal leukoencephalopathy
- 3- Cerebral toxoplasmosis
- 4- Haemorrhagic stroke
- 5- Cryptococcal infection

#### Answer & Comments

**Answer:** 2- Progressive multifocal leukoencephalopathy

Although all the diagnoses are possible the presence of non-enhancing white matter lesions suggest JC virus infection (PML). CSF PCR reveals JC virus in >90% of cases. If the lesions had been enhancing, toxoplasmosis would have been the most likely answer and a trial of sulphadiazine/pyrimethamine would have been indicated.



Large PML lesion in the left frontal lobe



[ Q: 736 ] MRCPass - Infectious disease

A 55 year old man presents with confusion. Along the way to the hospital, he had a witnessed generalised tonic clonic seizure.

On examination, he had a temperature of 38 C and MMSE score of 17/30. There was no focal neurological signs and he did not have a cardiac murmur. The admitting doctor organises a lumbar puncture and MRI scan of the brain to investigate the cause.

*Which one of the following features would be most suggestive of Herpes simplex encephalitis?*

- 1- Occipital change on MRI
- 2- Temporal lobe change on MRI
- 3- Negative CSF for bacteria and enteroviruses
- 4- Normal temperature
- 5- Lymphocytosis in CSF

#### Answer & Comments

**Answer:** 2- Temporal lobe change on MRI

HSV encephalitis is a rare disease but can affect patients who are otherwise fit and well. Neurological signs occur in around a third of cases. Fever is always present. Typically the temporal lobes are involved on MRI.

Subtype 1 virus accounts for 95% of cases. Brain biopsy is the "gold standard" for diagnosis but in practice a +ve PCR for HSV in CSF confirms the diagnosis. Treatment is with high-dose intravenous acyclovir.





Medial Temporal Lobe changes on MRI in HSV encephalitis



[ Q: 737 ] MRCPass - Infectious disease

A 40 year old African man, has been back to Africa for a holiday for several weeks. 6 months after coming back to the UK, he presented with fever and intermittent rigors.

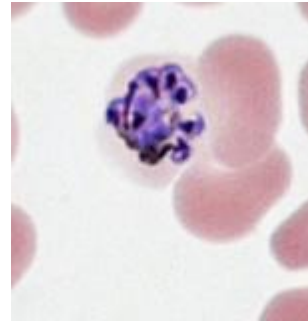
*What is the likely diagnosis?*

- 1- Plasmodium malaria
- 2- Plasmodium falciparum
- 3- Plasmodium ovale
- 4- Dengue
- 5- Trypanosomiasis

#### Answer & Comments

Answer: 3- Plasmodium ovale

Plasmodium ovale produces hypnozoites which are latent in the liver. Relapses can occur up to 5 years after infection. Plasmodium vivax infection may present similarly.



Plasmodium ovale parasite



[ Q: 738 ] MRCPass - Infectious disease

A 35 year old man with known HIV infection presents with a headache and neck stiffness. A lumbar puncture was performed.

CSF analysis showed:

Protein 0.55 g

Glucose 3.3 (serum glucose 6.6)

White cells : 30 with lymphocytosis

*What is the likely diagnosis?*

- 1- Listeria meningitis
- 2- Tuberculous meningitis
- 3- HSV meningitis
- 4- Cryptococcal meningitis
- 5- Subarachnoid haemorrhage

#### Answer & Comments

Answer: 2- Tuberculous meningitis

The history of immunosuppression, low glucose and lymphocytosis suggests tuberculous meningitis.



[ Q: 739 ] MRCPass - Infectious disease

A 45 year old man complains of general malaise. He has just returned from a 2 week holiday in Slovakia. On examination he appeared was pyrexial and had large palpable cervical lymph nodes bilaterally. His pharynx

had areas of exudate with a pale grey membrane.

*What is the best treatment option?*

- 1- Penicillin
- 2- Tetanus injection
- 3- Anti TB therapy
- 4- Amphotericin
- 5- Teicoplanin

#### Answer & Comments

Answer: 1- Penicillin

The diagnosis is diphtheria. Diphtheria can cause sorethroat with exudate, fever, cervical lymphadenopathy and occasionally neurological signs of flaccid paralysis. The illness is still present in Eastern Europe and Russia. Treatment is with diphtheria antitoxin, penicillin or erythromycin.



[ Q: 740 ] MRCPass - Infectious disease

A 42 year old man emigrated to the UK from South America 3 years ago. He has long standing left hemiparesis and also visual loss in the right eye. Several hard subcutaneous nodules are noted on several areas on the body.

*Which one of the following is the likely infection?*

- 1- Filariasis
- 2- Cysticercosis
- 3- Schistosomiasis
- 4- Syphilis
- 5- Cutaneous tuberculosis

#### Answer & Comments

Answer: 2- Cysticercosis

Cysticercosis is due to infection with *Taenia solium* and human tissue is invaded by the larval form. It commonly is found in Africa,

Southeast Asia, eastern Europe, and South America. Cerebral cysticercosis may present as epilepsy, meningoencephalitis or focal neurological deficit. Subcutaneous cysticercosis presents as hard, small, pea-sized nodules in the subcutaneous tissues. Praziquantel or albendazole with steroid cover is the treatment of choice.



[ Q: 741 ] MRCPass - Infectious disease

A 40 year old man is admitted for investigation of fevers having recently come back from Peru. The fever is intermittent and comes on every 72 hours. He has splenomegaly. A Giemsa stained thin blood film shows malarial parasites.

*Which species is it likely to be?*

- 1- Plasmodium vivax
- 2- Plasmodium ovale
- 3- Plasmodium falciparum
- 4- Plasmodium malariae
- 5- Plasmodium knowlesi

#### Answer & Comments

Answer: 4- Plasmodium malariae

*Plasmodium malariae* causes quartan fever (every 72 hours or fourth day) whereas the other species cause tertian fever (every 48 hours or third day). It is found particularly in temperate climates.



[ Q: 742 ] MRCPass - Infectious disease

A 22 year old woman presented with a 1-day history of fever, chills and severe back pain, with no other focal symptoms. On examination, she was febrile with a blood pressure of 75/40 mmHg, and had begun vomiting.

She was treated empirically with intravenous ceftriaxone and flucloxacillin and resuscitated

with intravenous fluids. Over several hours, the back pain resolved, and a widespread erythrodermic rash developed, centred mainly on the trunk. Further questioning revealed that the patient had removed a tampon shortly before presentation, as she had just ceased menstruating.

*What is the diagnosis?*

- 1- Haemolytic uraemic syndrome
- 2- E coli sepsis
- 3- Fungal infection
- 4- Toxic shock syndrome
- 5- Meningococcal septicaemia

#### Answer & Comments

Answer: 4- Toxic shock syndrome

Toxic shock syndrome is due to toxin-1 (TSST-1), a protein secreted by S.

aureus or streptococci, was the first of many toxins associated with the syndrome to be identified. Treatment is with penicillin and ceftriaxone.



[ Q: 743 ] MRCPass - Infectious disease

A 55 year old man who has a known history of chronic alcohol abuse presents with a week's history of fevers, night sweats and a cough productive of purulent sputum.

On examination he was pyrexial with a temp of 39.1°C. Percussion note was dull over the left apex and there was bronchial breathing over this area on auscultation. The chest xray showed left upper lobar consolidation.

Other investigations revealed:

WBC 19 x 10<sup>9</sup>/L

Neutrophils 18.3 x 10<sup>9</sup>/L

*What is the most likely diagnosis?*

- 1- PCP
- 2- Tuberculosis

- 3- Mycoplasma pneumonia
- 4- Klebsiella pneumonia
- 5- Legionella pneumonia

#### Answer & Comments

Answer: 4- Klebsiella pneumonia

Community acquired Klebsiella pneumonia is a disease of commonly affecting middle aged to older men with alcoholism. Klebsiella pneumonia characteristically affects one of upper lobes of the lung. There is an increased tendency toward abscess formation. Mycoplasma pneumoniae infections have a more insidious onset.



[ Q: 744 ] MRCPass - Infectious disease

A 23-year-old man presented to a hospital with a 3 day history of fever, rigors, confusion and malaise. A chest x-ray showed left lower lobe pneumonia. He works in a factory close to a water tank which acts as a heat exchange for the welding cooling system.

*What is the most likely infective organism?*

- 1- Pneumococcus
- 2- Legionella
- 3- Mycoplasma
- 4- Tuberculosis
- 5- Klebsiella

#### Answer & Comments

Answer: 2- Legionella

Legionnaire's disease is a severe form of pneumonia caused by the gram negative bacterium Legionella pneumophila. It is an airborne infection with the bacterium sometimes living in air-conditioning systems, whirlpool spas and domestic hot water systems in large buildings.



[ Q: 745 ] MRCPass - Infectious disease

A 34 year old man with HIV infection presents with several episodes of seizures. His CD4 count is 150 cells/mm<sup>3</sup>. He had an MRI scan which shows multiple ring enhancing lesions.

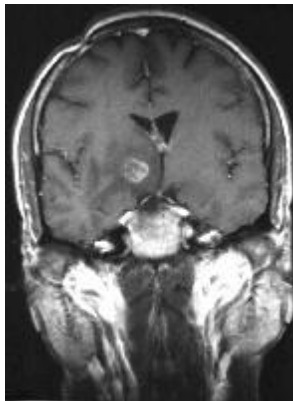
*What should be given for treatment?*

- 1- Prednisolone
- 2- Co-trimoxazole
- 3- Pyrimethamine
- 4- Foscarnet
- 5- Rifampicin

#### Answer & Comments

Answer: 3- Pyrimethamine

The likely diagnosis is cerebral toxoplasmosis. Tuberculosis usually causes single enhancing lesions and PML is less frequently ring enhancing. Lymphoma is also possible but not applicable in this scenario. Treatment for cerebral toxoplasmosis is pyrimethamine and sulphadiazine.



Ring enhancing lesion Overall, this question has been



[ Q: 746 ] MRCPass - Infectious disease

A 38 year old man who is an intravenous drug abuser complains of chest pain and dyspnoea. Chest X ray shows bilateral cavities at apex.

*What is the most likely diagnosis?*

- 1- Tuberculosis
- 2- Tricuspid endocarditis
- 3- Pulmonary embolism
- 4- Sarcoidosis
- 5- Extrinsic allergic alveolitis

#### Answer & Comments

Answer: 2- Tricuspid endocarditis

Right-sided endocarditis accounts for 5% of all cases of infective endocarditis and it is most often seen in intravenous drug abusers, the immunosuppressed and patients with central lines. The cavities on the chest x ray may represent abscesses due to embolic vegetations from endocarditis.



[ Q: 747 ] MRCPass - Infectious disease

A 28 year old banker goes on holiday to Brazil. He visits various holiday spots including a cattle ranch. He has headaches and a temperature of 38 °C. Examination reveals hepatosplenomegaly and spinal tenderness. His blood cultures do not grow any organisms.

*Which is the likely infective organism?*

- 1- Brucella melitensis
- 2- Listeria
- 3- Cryptosporidium
- 4- Shigella
- 5- Schistosomiasis

#### Answer & Comments

Answer: 1- Brucella melitensis

Brucella is spread by contact with cattle, drinking unpasteurized/raw milk. It causes sacroilitis and discitis, and hepatomegaly. Should be treated by doxycycline or rifampicin



[ Q: 748 ] MRCPass - Infectious disease

A pregnant 18 year old woman came to the clinic with a low -grade fever, malaise, and headache. She was sent home with a diagnosis of influenza. She again sought treatment 7 days later with a macular rash on her trunk, arms, hands, and feet. Further questioning of the patient when serology results were known revealed that 1 month previously, she had a painless ulcer on her vagina that healed spontaneously.

*Which of the following is the most likely diagnosis?*

- 1- Lyme disease
- 2- Lymphogranuloma venereum
- 3- Behcet's disease
- 4- Endocarditis
- 5- Syphilis

Answer & Comments

Answer: 5- Syphilis

The initial lesion of primary syphilis develops at the site of transmission after an incubation period of 10-90 days, with a mean of about 21-28 days, and then heals spontaneously in 3-7 weeks.

T pallidum is sensitive to the penicillins and is easily treatable in the early stages



Maculopapular rash in secondary syphilis



[ Q: 749 ] MRCPass - Infectious disease

A 40 year old man has HIV infection. He is admitted with a 4 month history of weight loss, lethargy and diarrhoea.

He presented 6 months previously with PCP pneumonia. He is on AZT, lamivudine and efavirenz therapy.

Investigations reveal:

Hb 9.8 g/dl, WCC  $6.5 \times 10^9/L$ , platelets  $75 \times 10^9/L$ , MCV 95 fl, CD4 count  $280 \times 10^6/ml$ , Alk Phos 270 U/l, Bilirubin

8 U/l, ALT 20 U/l, GGT 30U/l.

CXR: normal.

*What is the cause of the anaemia?*

- 1- Upper GI bleed
- 2- Haemolytic anaemia
- 3- Vitamin B<sub>12</sub> deficiency
- 4- Folate deficiency
- 5- Zidovudine therapy

Answer & Comments

Answer: 5- Zidovudine therapy

AZT has common side effects such as nausea and headaches, anaemia, bone marrow suppression and proximal myopathy. Some of these side effects may be caused by the sensitivity of  $\gamma$ -DNA polymerase in cell mitochondria to AZT.



[ Q: 750 ] MRCPass - Infectious disease

On the medical wards, there has been several new cases of clostridium difficile diarrhoea.

*What is the best way to prevent spread of clostridium difficile?*

- 1- Hand washing by staff and patients
- 2- Isolation of patients affected
- 3- Isolation of any staff affected

- 4- Treatment of asymptomatic carriers with oral vancomycin
- 5- Ward closure and sterilisation

#### Answer & Comments

**Answer:** 1- Hand washing by staff and patients

Infection control with hand washing has been a topical issue and there is great emphasis on the effectiveness of hand washing to prevent spread of many infections.



[ Q: 751 ] MRCPass - Infectious disease

A 20 year old woman has fevers and central chest pains which are pleuritic in nature. She also gives a history of arthralgia. On examination, she has a systolic murmur loudest in the mitral region. She also has serpigionous erythematous rash on the abdomen and has subcutaneous nodules in the right elbow .

Blood tests show Hb 9.8 g/dl, WCC  $14 \times 10^9/L$ , platelets  $280 \times 10^9/L$ , CRP 120 mg/l. Echocardiogram shows moderate mitral regurgitation.

*What is the likely diagnosis?*

- 1- Coxsackie virus infection
- 2- Libman sacks endocarditis
- 3- Rheumatoid arthritis
- 4- Rheumatic fever
- 5- Lyme disease

#### Answer & Comments

**Answer:** 4- Rheumatic fever

The patient has symptoms which would satisfy the Duckett Jones criteria for rheumatic fever. Either 2 major, or 1 major/ 2 minor criteria would be required with evidence of Streptococcal infection e.g. ASOT.



[ Q: 752 ] MRCPass - Infectious disease

46 year old man has had a history of HIV infection known for 6 years. He presented with confusion and has had a lumbar puncture.

Results of the CSF showed:

White cells  $150/mm^3$

Glucose 4 mmol/l

Protein 0.55 g/l

*What is the likely diagnosis?*

- 1- AIDS dementia complex
- 2- CNS lymphoma
- 3- HSV encephalitis
- 4- Disseminated tuberculosis
- 5- Cerebral toxoplasmosis

#### Answer & Comments

**Answer:** 3- HSV encephalitis

The glucose is not sufficiently low to suggest tuberculosis, and the scenario fits with HSV encephalitis. This is not an AIDS defining illness but does occur in patients who are immunosuppressed.



[ Q: 753 ] MRCPass - Infectious disease

A 25 year old lady has recently returned from Namibia in Africa. On examination his temperature was  $38^\circ C$ , and inspiratory respiratory crackles were present. He had a maculopapular rash and a few some blue-grey spots in the buccal area.

*Which of these diagnoses is likely?*

- 1- Subacute sclerosing panencephalitis
- 2- Dengue fever
- 3- Measles
- 4- Behcet's disease
- 5- Rubella



## Answer &amp; Comments

**Answer:** 3- Measles

Measles is still common in Africa, although immunisation has greatly reduced incidences in many areas. The presentation is usually with fever, dry cough, conjunctivitis, a rash, lymphadenopathy or hepatosplenomegaly. The blue-grey spots on the buccal mucosa are known as Koplik spots. In young children, latent infection can involve the central nervous system - known as subacute sclerosing panencephalitis. Treatment is with supportive care.



Koplik's spots



[ Q: 754 ] MRCPass - Infectious disease

A 25 year old male man has urethral discharge. Gram stain of the discharge sample shows gram negative intracellular diplococci. The patient is treated with cefotaxime as a 500mg single intramuscular dose. A week later, the patient still has urethral discharge.

*Which of the following organisms is likely to be responsible?*

- 1- Neisseria gonorrhoeae
- 2- Ureaplasma
- 3- Chlamydia trachomatis
- 4- Staphylococcus aureus

5- Escherichia coli

## Answer &amp; Comments

**Answer:** 3- Chlamydia trachomatis

Although the diplococci are likely to be gonorrhoea, this patient has been treated and it makes this less likely. Recommended treatment options for gonococcal infection are ceftriaxone 250mg single im dose OR cefotaxime (Claforan) 500mg single im dose for gonorrhoea. Persistent discharge suggests another organism, in this case likely Chlamydia. Doxycycline would be therefore recommended.



[ Q: 755 ] MRCPass - Infectious disease

A 22 year old girl presents with headache and neck stiffness. She was pyrexial but had no signs of raised intracranial pressure on examination. Cerebrospinal fluid analysis showed: Cell count 130 /mL (predominantly lymphocytes), Protein 0.6 g/L, Glucose 3.3 mmol/L, Gram stain showed no organisms.

*Which diagnosis is likely?*

- 1- Meningococcal meningitis
- 2- Tuberculous meningitis
- 3- Herpes encephalitis
- 4- Viral meningitis
- 5- Aseptic meningitis

## Answer &amp; Comments

**Answer:** 4- Viral meningitis

The combination of lymphocytosis, raised protein and normal glucose suggests viral meningitis. Common causes are enterovirus and mumps



[ Q: 756 ] MRCPass - Infectious disease

A 30 year old white woman was referred by her general practitioner to her local hospital with a painful vesicular genital rash. On presentation she was complaining of headache, neck stiffness, unsteadiness when walking, double vision, and photophobia.

On admission, she was alert and oriented, pyrexial (38°C), and hypertensive (blood pressure 180/80 mm Hg). An extensive vesicular rash was noted on the posterior aspect of the right thigh, and bilaterally in the sacral and perianal areas. There were no vesicles elsewhere. Neurological examination revealed an intention tremor, marked upper limb and truncal ataxia and variable ophthalmoplegia with diplopia and nystagmus.

Cerebrospinal fluid analysis showed a predominantly lymphocytic pleocytosis.

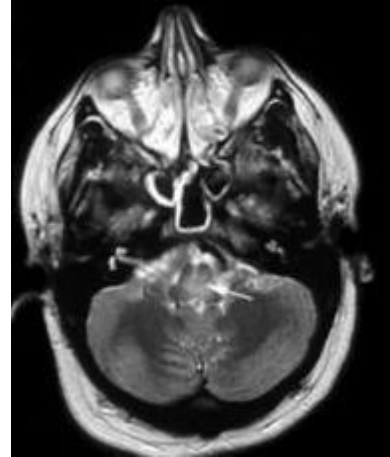
*What is the likely diagnosis?*

- 1- Pneumococcal meningitis
- 2- Progressive multifocal leukoencephalopathy
- 3- Tuberculous meningitis
- 4- Meningococcal meningitis
- 5- HSV encephalitis

Answer & Comments

Answer: 5- HSV encephalitis

In adults HSV-2 usually causes uncomplicated genital herpes, but occasionally this may predispose to HSV-2 encephalitis. Neurological signs vary. MRI can confirm the diagnosis, demonstrating hyperintensity. Treatment is with intravenous aciclovir.



HSV encephalitis causing hyperintensity in the medulla (arrow)



[ Q: 757 ] MRCPass - Infectious disease

A 30 year old lady presents to renal transplant clinic with fever and diarrhoea. She is 7 weeks post live-related-donor transplantation. Her initial course had been complicated by an episode of acute rejection which responded to treatment with anti-thymocyte globulin (ATG). She is currently maintained on prednisolone, cyclosporin and azathioprine and has just finished a course of oral ciprofloxacin for an E. coli urinary tract infection. Blood tests reveal a mild hepatitis and leucopenia, and her creatinine has been rising.

*The most likely diagnosis is:*

- 1- Recurrent urinary tract infection
- 2- Cytomegaloviral infection
- 3- Graft-versus-host disease
- 4- Ciprofloxacin toxicity
- 5- Cyclosporin toxicity

Answer & Comments

Answer: 2- Cytomegaloviral infection

Several weeks post transplantation would be right for a presentation of cytomegaloviral (CMV) infection. It is commonest between 1-3 months post transplantation and the risk of severe infection is increased by the use of

immunosuppressants such as Anti Thymocyte Globulin.

A number of complications can occur with CMV infection : pneumonitis, colitis, hepatitis, retinitis, leucopenia and thrombocytopenia can occur. Diagnosis can be made by detection of CMV antigen or with polymerase chain reaction (PCR) from blood. Tissue biopsy may show inclusion bodies.



[ Q: 758 ] MRCPass - Infectious disease

A 44 year old man has arrived from Saudi Arabia to the UK 5 days ago. He now presents with painful episodes of trismus. He mentions he had a cut to his foot while walking barefoot in his garden 5 days ago. He suddenly has an episode of generalised tetanus with respiratory arrest.

*What should be given to him?*

- 1- IM tetanus antitoxin
- 2- IV gentamicin
- 3- PR paracetamol
- 4- Amputate the foot
- 5- Ionotropes

#### Answer & Comments

Answer: 1- IM tetanus antitoxin

The antibiotic of choice is IV metronidazole. If he is having generalized spasms he may require ventilation and muscle relaxants with or without neuromuscular blockade. IM antitoxin should be given immediately to absorb up any unbound tetanus toxin. After recovery from infection he will still have no immunity to tetanus and the first dose of tetanus toxoid is given, with Two further doses to follow .



[ Q: 759 ] MRCPass - Infectious disease

A 30 year old lady has a mild fever, sore throat and a erythematous, macular rash develops on the face giving the appearance of a slapped cheek. Her child had a similar illness a week ago. Her blood results are normal.

*Which one of the following features is associated?*

- 1- Renal failure
- 2- Jaundice
- 3- Aplastic anaemia
- 4- Polyarthrititis
- 5- Meningitis

#### Answer & Comments

Answer: 4- Polyarthrititis

Parvovirus infection has an incubation period of 6 - 14 days. Presentation is usually with a prodrome of mild fever with a sore throat and gastrointestinal disturbance which lasts for up to 4 days. An erythematous rash giving a slapped cheek appearance is classical. Polyarthrititis and lymphadenopathy are also associated.



[ Q: 760 ] MRCPass - Infectious disease

A 35 year old woman presented with a non-healing genital ulcer. She had travelled through Africa 3 years previously.

On examination, An indurated 1.5 cm ulcer was present on the inner aspect of the left labia majoris.

Skin biopsy of the lesion revealed a granuloma surrounding a schistosome egg. Schistosoma haematobium eggs were detected in terminal urine collected between midday and 2 pm.

*What should she be treated with?*

- 1- Quinine
- 2- Benzylpenicillin

- 3- Tetracycline
- 4- Flucloxacillin
- 5- Praziquantel

#### Answer & Comments

**Answer:** 5- Praziquantel

Schistosomal infestation may persist and present long after leaving an endemic area.

Serological tests are the most sensitive method of screening, but are not species-specific. Indirect hemagglutination titres ? 64 suggest infection.

Treatment is with praziquantel.



Schistosomal Egg in the urine



[ Q: 761 ] MRCPass - Infectious disease

A woman who is 32 weeks pregnant presents with blistering vesicles present all over her body. Varicella zoster virus infection is diagnosed.

*How should the patient be treated?*

- 1- Antiretroviral therapy
- 2- Oral acyclovir
- 3- Varicella Zoster immune globulin
- 4- Methylprednisolone
- 5- Caesarean section

#### Answer & Comments

**Answer:** 2- Oral acyclovir

This patient has chickenpox (varicella zoster infection). In the non-immune pregnant woman, chickenpox is a potentially dangerous

disease that may infect the baby and cause abnormalities. They may develop congenital defects, mainly heart defects, deafness and cataracts (eye lens opacities). The risk drops as pregnancy advances beyond 20 weeks.

Oral acyclovir is safe in pregnancy. At a later stage the main danger is that a new born child would become infected with no transfer of antibody from the mother. In that case VZig should be given to the child, but it has no role in therapy of the mother.



Chickenpox



[ Q: 762 ] MRCPass - Infectious disease

A 32 year old man has returned from Thailand 4 months ago. He presents with vomiting, lethargy, myalgia and right upper quadrant pains. He mentions that whilst he was in Thailand on holiday, he was treated for severe falciparum malaria. Investigations show :

ALT 2,100 (5-35) U/l  
AST 1,700 (1-31) U/l  
ALP 350 (20-120) U/l  
GGT 70 (4-35) U/l  
Bilirubin 320 (1-22) µmol/l  
Albumin 30 (37-49) g/l  
Glucose 3 mmol/l

*What is the likely diagnosis?*

- 1- Falciparum malaria
- 2- Leishmaniasis
- 3- Hepatitis B

4- Dengue

5- Schistosomiasis

**Answer & Comments**Answer: 3- Hepatitis B

The incubation period for hepatitis B is 6 weeks to 6 months. The symptoms and deranged LFTs along with hypoglycaemia would suggest severe hepatitis and also seroconversion illness associated with hepatitis B.



[ Q: 763 ] MRCPass - Infectious disease

A middle-aged, obese man had previously been treated for chronic venous insufficiency-related swelling and cellulitis. He had hyperpigmentation and hemosiderin deposition. A further wound swab grew *Pseudomonas aeruginosa*.

*Which one of the following antibiotics is recommended?*

- 1- Ciprofloxacin
- 2- Flucloxacillin
- 3- Benzylpenicillin
- 4- Cephalixin
- 5- Metronidazole

**Answer & Comments**Answer: 1- Ciprofloxacin

*Pseudomonas* can also cause otitis media, pneumonia (in cystic fibrosis), urinary tract infection and rarely, endocarditis. Gentamicin, ciprofloxacin and meropenem are antibiotics which are effective against *pseudomonas* infection.



[ Q: 764 ] MRCPass - Infectious disease

An 75 year old man presents to hospital unwell with diarrhea. He has a BP of 100/70, heart rate 110 and Temp 38°C. A diastolic murmur is heard in aortic area.

His bloods show Hb 9.0 g/dl, MCV 85 fl, WCC  $13 \times 10^9/L$ , platelets  $270 \times 10^9/L$ , urea 6  $\mu\text{mol/l}$ , creatinine 80  $\mu\text{mol/l}$ , sodium 140 mmol/l, potassium 3.8 mmol/l, ESR 80 mm/hr, CRP 220 mg/l.

*Which organism is likely to grow in the blood cultures?*

- 1- Streptococcus mitis
- 2- Staphylococcus aureus
- 3- Streptococcus bovis
- 4- Escherichia coli
- 5- Brucella melitensis

**Answer & Comments**Answer: 3- Streptococcus bovis

*Streptococcus bovis* usually enters the bloodstream via the gastrointestinal tract. Nearly all patients with *S bovis* endocarditis are older than 50 years, and there is also an association with malignancy of the GI tract. Treatment is with penicillin and vancomycin.



[ Q: 765 ] MRCPass - Infectious disease

A 75 year old woman presented with a non healing ulcer on her foot. This has been managed by the podiatrist for the past 8 weeks. Blood cultures and a wound swab both grew MRSA.

*What antibiotics would you consider in addition to vancomycin?*

- 1- Flucloxacillin
- 2- Metronidazole
- 3- Rifampicin
- 4- Ciprofloxacin



## 5- Azithromycin

## Answer &amp; Comments

Answer: 3- Rifampicin

For serious infections caused by MRSA strains that are susceptible to rifampicin, adding this agent to vancomycin or a fluoroquinolone may contribute to improved outcomes. Vancomycin continues to be the drug of choice for treating most MRSA infections caused by multidrug resistant strains.



[ Q: 766 ] MRCPass - Infectious disease

A 50 year old health care worker has been to India for several months. He was fully vaccinated prior to travel.

Following return to the UK, a relative notices that he is yellow. He has a bilirubin of 46 umol/l and ALT of 2500 U/l.

*What is the most likely diagnosis?*

- 1- Hepatitis B
- 2- Infectious mononucleosis
- 3- Hepatitis E
- 4- Yellow fever
- 5- Leptospirosis

## Answer &amp; Comments

Answer: 3- Hepatitis E

Both hepatitis A and E are transmitted by the faeco-oral route. He is likely to have been vaccinated against A prior to travel and B in the context of his occupation. This would lead to a transient marked transaminitis and jaundice. The condition should resolve with conservative management but is associated with a 1-2% mortality due to the risk of fulminant hepatitis in patients with underlying liver disease and pregnant women in the last trimester in whom the mortality is around 20%.



[ Q: 767 ] MRCPass - Infectious disease

A 30 year old male was readmitted to surgical ward with history of pain and swelling in the left shoulder, following a lipoma removal. Small vesicles appeared over the left shoulder and arm.

On examination, patient looked ill, the pulse rate was 100 beats per minute and blood pressure was 118/76 mm Hg. X-ray of the left shoulder and arm revealed diffuse gas bubbles in the intermuscular tissue planes.

*Which one of the following is the most likely infective organism?*

- 1- Streptococcus pyogenes
- 2- Neisseria gonorrhoeae
- 3- Staphylococcus aureus
- 4- Clostridium perfringens
- 5- Tuberculosis

## Answer &amp; Comments

Answer: 4- Clostridium perfringens

Cases of gas gangrene are known to occur following trauma and surgical procedures. C. perfringens is the causative agent of gas gangrene. Both the enterotoxin producing strains of Clostridium perfringens and Clostridium difficile can cause diarrhoea. C. tetani and C. botulinum form neurotoxins (Botulism is associated with a flaccid paralysis).



[ Q: 768 ] MRCPass - Infectious disease

A 30 year old woman presents with bloody diarrhoea. The diarrhoea started Two weeks ago, and was associated with increasing malaise. There was mild swelling of the lower limbs. She has had difficulty passing urine. She had eaten rare steak during a party recently. On examination she was pale, and there was evidence of petechiae over her legs. Blood



pressure was 150/95 on admission. On examination she was afebrile, but had a resting tachycardia. There were also crackles on inspiration at both lung bases.

Investigations show :

Haemoglobin 9 g/dL

White cell count  $12.2 \times 10^9/L$

Neutrophils  $8.7 \times 10^9/L$

Platelets  $42 \times 10^9/L$

PT 13 sec

APTT 36 sec

Fibrinogen 5 g/dL

Serum sodium 138 mmol/L

Serum potassium 6.3 mmol/L

Serum urea 30 mmol/L

Serum creatinine 426  $\mu\text{mol/L}$

Serum albumin 28 g/L

Dipstick urine Blood ++ Protein +

*What is the most important next investigation which might yield a diagnosis?*

- 1- Renal tract ultrasound
- 2- Stool culture
- 3- Urine microscopy
- 4- CT scan of the abdomen
- 5- Echocardiogram

#### Answer & Comments

Answer: 2- Stool culture

This patient has haemolytic uraemic syndrome (HUS). It typically presents with a triad of

acute renal failure, Microangiopathic haemolytic anaemia, thrombocytopenia and deranged clotting. Haemolytic uraemic syndrome is most commonly a complication of infection with verocytotoxin producing E.coli usually of serotype O157. Stool cultures would best confirm the diagnosis. In addition, a

blood film may show haemolysis and evidence of fragmented erythrocytes.



[ Q: 769 ] MRCPass - Infectious disease

A 45 year old man went on a boat cruise in the Caribbean. Several days later he developed abdominal cramps and bloody diarrhoea. On examination, he has a pyrexia Temp 38 C and generalised tenderness in the lower abdomen.

*What is the likely cause?*

- 1- Rotavirus
- 2- Sodium monoglutamate excess
- 3- Entamoeba Histolytica
- 4- Giardia Lamblia
- 5- Salmonella species

#### Answer & Comments

Answer: 5- Salmonella species

The likely organism from this history causing bloody diarrhea is Salmonella. Entamoeba is uncommon around the Caribbean. Shigella, salmonella and campylobacter are all possibilities which may cause bloody diarrhoea. Giardia does not usually cause fevers and rotavirus does not usually cause bloody diarrhoea.



[ Q: 770 ] MRCPass - Infectious disease

A 75 year old man has fevers, neck stiffness and headaches. He has a past medical history of polymyalgia rheumatica and has been on steroids long term. Meningitis is suspected and a lumbar puncture is performed.

CSF shows protein of 1.2 g/L, glucose 3.4 mmol/L, white cell count 95 (75% lymphocytes, 20% polymorphs). A few gram positive rods are seen on microscopy.

*What is the likely infective organism?*

- 1- Meningococcus

- 2- Mycobacterium tuberculosis
- 3- Cryptococcus
- 4- Listeria monocytogenes
- 5- Staphylococcus aureus

#### Answer & Comments

**Answer:** 4- Listeria monocytogenes

The elderly, especially those with immunocompromise, are prone to Listeria meningitis. Treatment is with high dose IV ampicillin or amoxycillin (2g qds).



[ Q: 771 ] MRCPass - Infectious disease

A 18 month old child in India has painless ulcerated lesion over the right buttock of 10 days duration. The infant's mother initially noticed a papule in that area that increased in size and ulcerated spontaneously to form a blackish eschar. The only other significant history was the death of a cattle in the neighborhood.

Cutaneous examination revealed a dark hemorrhagic eschar surrounded by a zone of edema and erythema, studded with several small vesicles that have coalesced.

*What is the likely diagnosis?*

- 1- Chickenpox
- 2- Impetigo
- 3- Anthrax
- 4- Tetanus
- 5- Rabies

#### Answer & Comments

**Answer:** 3- Anthrax

This is a case of cutaneous anthrax. Bacillus anthracis, a spore-forming bacterium, is the etiologic agent of anthrax. B. anthracis spores can be aerosolized, are relatively easy to produce, and are capable of producing high

mortality when inhaled. Ciprofloxacin [400 mg intravenously (i.v.) 12 hrly] the drug of choice.



Cutaneous Anthrax



[ Q: 772 ] MRCPass - Infectious disease

An asymptomatic 25 year HIV positive male patient is followed up at the clinic. Investigations reveal a viral load of 270,000 copies/ml and a CD4 count of  $190 \times 10^6/\text{ml}$ .

*What is the appropriate treatment strategy in this patient?*

- 1- Start antiretroviral therapy
- 2- Start antiretrovirals when count < 100
- 3- Start prednisolone
- 4- MRI brain
- 5- Lumbar puncture

#### Answer & Comments

**Answer:** 1- Start antiretroviral therapy

Generally, antiretroviral therapy should be initiated in asymptomatic patients if a CD4 count between 200 to 350 (or less). A HIV RNA level (viral load) of >30,000 copies/ml also meets the criteria for starting therapy.



[ Q: 773 ] MRCPass - Infectious disease

A 30 year old lady has fevers, muscular pains all over, vomiting and diarrhoea. Her temperature is  $39^\circ\text{C}$  and blood pressure is 85/40 mmHg. There is an erythematous

desquamating rash in both her hands and legs. Her tongue is also red.

*Which is the likely diagnosis?*

- 1- Toxic shock syndrome
- 2- Haemolytic uraemic syndrome
- 3- Disseminated intravascular coagulation
- 4- Meningococcal sepsis
- 5- JC virus infection

#### Answer & Comments

Answer: 1- Toxic shock syndrome

The presentation of pyrexia, shock, diarrhoea and vomiting, myalgia, desquamating rash and mucous membrane involvement would be consistent with toxic shock syndrome. It can also present with abnormal liver and renal function, as well as thrombocytopenia. Toxic shock syndrome can be caused by both staphylococcus (tampon related) and streptococcus (skin infection).



[ Q: 774 ] MRCPass - Infectious disease

A 35 year old man was in South East Asia on holiday backpacking alone. He has returned 5 days ago, having been there for a month. His temperature is 38°C and he has a swollen ankle and elbow joint. He also complains of purulent penile discharge.

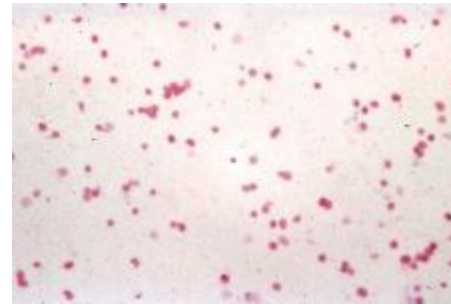
*Which of the following conditions/infections is likely?*

- 1- Reiter's syndrome
- 2- Chlamydia trachomatis
- 3- Neisseria gonorrhoeae
- 4- Staphylococcus aureus
- 5- Treponema pallidum

#### Answer & Comments

Answer: 3- Neisseria gonorrhoeae

This is a typical presentation for gonorrhoeae. There is penile discharge and knee effusions. The discharge and knee aspirate may grow gram negative diplococci. Current recommended treatment is ceftriaxone 125 mg IM single dose. Concurrent treatment for chlamydia should be given for 3-6 weeks, to include oral tetracycline 500 mg 4 times a day or oral doxycycline 100 mg twice a day.



Gram negative diplococci - N. Gonorrhoeae



[ Q: 775 ] MRCPass - Infectious disease

A 38 year old man with previously treated early syphilis and hepatitis C infection presented to a hospital complaining of 3 months of tender right inguinal lymphadenopathy. An excisional biopsy showed the formation of necrotising granuloma indicative of Lymphogranuloma venereum.

*What should the patient be treated with?*

- 1- Benzylpenicillin
- 2- Erythromycin
- 3- Clindamycin
- 4- Gentamicin
- 5- Doxycycline

#### Answer & Comments

Answer: 5- Doxycycline

Confirmation of a diagnosis of LGV requires serological tests or PCR on genitourinary specimens. Prolonged treatment with

doxycycline or roxithromycin for 3 weeks is required for affected patients.



Lymphogranuloma venereum



[ Q: 776 ] MRCPass - Infectious disease

A 30 year old woman has just given birth to a baby 2 weeks premature. The baby has a hypoplastic right eye.

She mentions that early on in the pregnancy she has a flu-like illness associated with a rash.

*What is the probably cause of the congenital defect?*

- 1- Rheumatic fever
- 2- Varicella zoster
- 3- Mycoplasma
- 4- Toxic shock syndrome
- 5- Parvovirus B19 infection

#### Answer & Comments

Answer: 2- Varicella zoster

The patient is likely to have had chickenpox infection during the second trimester of pregnancy (risk at this stage = 2% due to limb development, risk in 1st trimester = 1% unlike other congenital infections). Rubella infection of the mother may cause spontaneous abortion or causes serious damage to the surviving foetus - characterised by deafness, blindness and heart defects (risk >90% in 1st trimester). Parvovirus causes severe anaemia in the foetus and may result in hydrops foetalis as a result of heart failure.



[ Q: 777 ] MRCPass - Infectious disease

A 42 year old man presented 10 days after returning from a 8-week holiday in South-East Asia. He had an eight-day history of malaise, chills, headache, sore throat and generalised rash. He had reported many mosquito bites.

He had fever, a macular rash and generalised lymphadenopathy with mild splenomegaly, but no meningism and no eschar present.

Full blood examination revealed lymphocytosis with numerous atypical lymphocytes and thrombocytopenia. Blood cultures and malaria films were negative. Liver function tests revealed marginally elevated serum transaminase levels. Serological testing revealed past infection with Epstein-Barr virus and cytomegalovirus and was negative for Q fever, dengue, rubella, measles and rickettsial infection.

*What is the most likely diagnosis?*

- 1- HIV
- 2- Dengue fever
- 3- Syphilis
- 4- Lyme disease
- 5- Malaria

#### Answer & Comments

Answer: 1- HIV

Acute HIV seroconversion may mimic several tropical diseases, including dengue and typhus, as well as infectious mononucleosis.



[ Q: 778 ] MRCPass - Infectious disease

A 25 year old patient was prescribed amoxicillin for tonsillitis. She goes to see her GP complaining that she has developed a maculopapular rash on her trunk and arms.

*Which infection is she likely to have?*

- 1- Cytomegalovirus

- 2- Tuberculosis
- 3- Epstein Barr virus
- 4- Echovirus
- 5- Coxsackie virus

#### Answer & Comments

**Answer:** 3- Epstein Barr virus

In glandular fever (EBV infection or infectious mononucleosis), there is an increased risk of developing a rash with amoxycillin or ampicillin. Hence, these antibiotics are contraindicated.



[ Q: 779 ] MRCPass - Infectious disease

A 45 year man with alcoholic cirrhosis was admitted unwell. He had marked ascites and a temp of 38°C. An ascitic tap showed a white cell count of 350 cells per mm<sup>3</sup>.

*Which of the following is the appropriate antibiotic?*

- 1- Iv cefotaxime
- 2- Iv metronidazole
- 3- Iv ciprofloxacin
- 4- Iv amoxycillin
- 5- Iv vancomycin

#### Answer & Comments

**Answer:** 1- Iv cefotaxime

This lady has spontaneous bacterial peritonitis (cells >300). The organisms are usually E.

Coli, Pseudomonas, Klebsiella, S Pneumoniae and Enterococci. Initial treatment should be broad spectrum such as cefotaxime. Gentamicin & ampicillin should be considered.



[ Q: 780 ] MRCPass - Infectious disease

A 18-year-old man who was previously well developed an upper respiratory tract infection followed by fever and cough, excessive sweating and progressive dyspnea. He works in a factory with humidifiers. One day prior to admission the patient developed hemoptysis, left-sided pleuritic chest pain and dizziness.

On examination, the patient was drowsy and tachypneic. Blood pressure was 130/70 mm/Hg, pulse rate 92/min, respiratory rate 28/min, and temperature 40°C. Chest auscultation revealed bilateral crepitations in the lower lung zones. The patient was commenced on intravenous amoxycillin.

Legionella titer available on the third day was 1:256.

*What antibiotic should be added?*

- 1- Erythromycin
- 2- Tazocin
- 3- Linezolid
- 4- Rifampicin
- 5- Gentamicin

#### Answer & Comments

**Answer:** 1- Erythromycin

Legionella species can survive for a long period of time in water and has been found in moist soil. This may explain the association of infection with recent excavation, air conditioner cooling towers, respiratory devices and humidifiers. A macrolide e.g. erythromycin is recommended for treatment.



[ Q: 781 ] MRCPass - Infectious disease

A 35 year old patient has a stiff neck, myalgia and joint pains in the knees, shoulders and elbows. He had felt that his heart beat was irregular. He also developed a rash that came and went on the back over several weeks.



*Which is the best diagnostic test?*

- 1- Monospot test
- 2- Herpes virus serology
- 3- Immunofluorescent antibodies to *Borrelia burgdorferi*
- 4- Coxsackie virus serology
- 5- Serum Anti streptolysin O titres

#### Answer & Comments

**Answer:** 3- Immunofluorescent antibodies to *Borrelia burgdorferi*

This is Lyme disease. It is caused by tick bites spreading *Borrelia burgdorferi*. The rash is erythema chronicum migrans. Joint pains and irregular heart beats are common symptoms. Heart block can occur.



Erythema Chronicum Migrans



[ Q: 782 ] MRCPass - Infectious disease

*Which one of the following cytokines is commonly secreted by the T helper 2 cell?*

- 1- IL-1
- 2- IL-4
- 3- IL-2
- 4- TNF alpha
- 5- IFN gamma

#### Answer & Comments

**Answer:** 2- IL-4

TH1 cells commonly secrete IFN gamma and IL2, leading to B cell, natural killer and macrophage activation. TH2 cells secrete IL3, 4, 5 and 6, leading to mast cells and eosinophil activation.



[ Q: 783 ] MRCPass - Infectious disease

A 23 year old student has just returned from India having been on a holiday. He was bitten by flies whilst he was there. He has been lethargic for Two months and has a fever. Clinical examination reveals hepatosplenomegaly.

Ultrasound of the abdomen reveals lymphadenopathy. One of the lymph nodes are biopsied (a smear shows amastigotes within a macrophage).

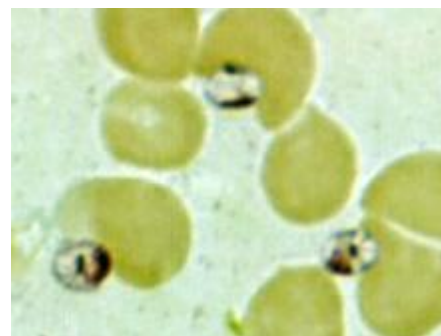
*What is the diagnosis?*

- 1- Leishmaniasis
- 2- Babesiosis
- 3- Schistosomiasis
- 4- Malaria
- 5- Amoebiasis

#### Answer & Comments

**Answer:** 1- Leishmaniasis

Leishmaniasis (Kala Azar) is spread by bites from sandflies. Cutaneous lesions can occur at the site of the bite. Visceral leishmaniasis can occur, causing hepatosplenomegaly. The smears can show Donovan bodies (amastigotes of *Leishmania donovani*).





Three Leishmania amastigotes, each with a clearly visible nucleus



[ Q: 784 ] MRCPass - Infectious disease

A 45 year old man had roast beef lunch on Sunday. Later that night (about 8 hours later), he developed abdominal pains and diarrhoea. On examination, he had a temperature of 37.8 C and generalised abdominal tenderness.

Stool examination reveals no evidence of blood.

*Which of the following infective organisms is likely?*

- 1- E coli
- 2- Shigella
- 3- Enterovirus
- 4- Clostridium perfringens
- 5- Rotavirus

#### Answer & Comments

Answer: 4- Clostridium perfringens

The incubation time of 12-24 hours suggests that clostridium perfringens is the most likely organism. Although the organism is well known for complications following trauma / wounds leading to gas gangrene, it can also cause diarrhoea.

Clostridium perfringens multiplies within the gut with release of endotoxin during sporulation. It accounts for about 20% of bacterial diarrhoea.

Clinically, there is abdominal pain and diarrhoea, rarely, vomiting, with onset of symptoms between 12 and 18 hours after incubation, and usually lasting for one day.

Spores are ubiquitous - in animal and human gut, and the soil. Treatment is conservative for diarrhoea, but in the case of gas gangrene, penicillin is the antibiotic of choice.



[ Q: 785 ] MRCPass - Infectious disease

A 55 year old man has a Two week history of fever, dry cough, central pleuritic chest pain and breathlessness.

On examination, he has a blood pressure of 110/ 60 mmHg, heart rate of 115 bpm and the JVP is elevated by 8 cm. Chest X ray shows pulmonary shadowing. The ECG shows global ST elevation and T wave inversion.

*What is the most likely diagnosis?*

- 1- Coxiella pneumonia
- 2- Coxsackie virus infection
- 3- Mycoplasma pneumonia
- 4- Pneumocystis pneumonia
- 5- Pulmonary tuberculosis

#### Answer & Comments

Answer: 2- Coxsackie virus infection

The pleuritic pains and ECG changes suggests myocarditis. One of the commonest cause of this is coxsackie virus.

This may have led to pulmonary oedema, or even a pericardial effusion causing a raised JVP.



[ Q: 786 ] MRCPass - Infectious disease

A 37 year old male who was known to be HIV positive presents with malaise, and confusion. His CD4 count measured 1 month ago was  $150 \times 10^6/l$ . There was a witnessed generalized seizure 12 hours ago. MRI shows multiple ring enhancing mass lesions in the brain.

*What is the treatment of choice?*

- 1- Fluconazole
- 2- Sulphadiazine and pyrimethamine
- 3- Rifampicin and pyrazinimide
- 4- Ceftazidime
- 5- Prednisolone

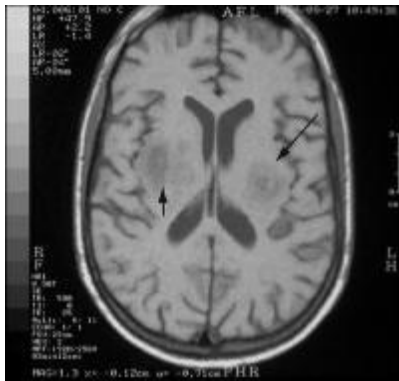
## Answer &amp; Comments

**Answer:** 2- Sulphadiazine and pyrimethamine

The diagnosis is likely to be cerebral toxoplasmosis due to the multiple ring enhancing lesions on CT /MRI scans.

There is an acute onset of focal neurological deficit over a few days e.g. hemiparesis, apraxia, visual field defects or cerebellar signs. Seizures may occur.

There is commonly clouding of consciousness with fever and constitutional symptoms. Treatment of choice is with sulphadiazine and pyrimethamine.



Cerebral Toxoplasmosis causing Ring Enhancing lesions



[ Q: 787 ] MRCPass - Infectious disease

A 6 year old child presented for a comprehensive eye exam. Her mother said she was born with some type of eye disease that left her blind in the left eye since birth and with very poor vision in the right eye. Dilated fundus exam demonstrated chorioretinal scars in both eyes.

**What is the likely infective diagnosis?**

- 1- CMV
- 2- Toxoplasmosis
- 3- Varicella zoster
- 4- Herpes zoster
- 5- Meningococcus

## Answer &amp; Comments

**Answer:** 2- Toxoplasmosis

Ocular toxoplasmosis results from infection of the retina by *Toxoplasma gondii*, an intracellular parasite that resides in cats' intestines, undercooked meats or other foods that contain the tissue cysts, or from mother to child during pregnancy. The ocular findings are the most common features of congenital toxoplasmosis. Affected infants usually are born with bilaterally healed chorioretinal scars in the posterior pole.



Fundus showing chorioretinal scars - Ocular Toxoplasmosis



[ Q: 788 ] MRCPass - Infectious disease

A 35 year old lecturer is taken ill on returning from a 2 week walking holiday around Eastern Europe. He presents with headache, neck stiffness, photophobia, and right sided Bell's palsy. He complains of polyarthralgia affecting shoulders, hips and knees associated with fever and fatigue for the previous 2 weeks associated with an urticarial type rash affecting the right thigh.

**What is the diagnosis?**

- 1- Infectious Mononucleosis
- 2- Rheumatic fever
- 3- Leishmaniasis
- 4- Schistosomiasis
- 5- Lyme disease

## Answer &amp; Comments

**Answer:** 5- Lyme disease

This patient is presenting in the second stage of Lyme disease as characterised by the neurological involvement of his Bell's palsy. Lyme disease due to *Borrelia burgdorferi* is the commonest vector borne disease in the USA and occurs widely throughout Europe and the former Soviet Union.



Erythema Chronicum Migrans due to Lyme disease



[ Q: 789 ] MRCPass - Infectious disease

A 65 year old woman presents with a 2 day history of fever, generalized headaches and confusion. An MRI scan shows increased signal in the right temporo-parietal area. CSF shows 100 white cells (85% lymphocytes), protein 0.65 g/l and an opening pressure of 21 cm. Glucose is normal. No organisms are seen on microscopy.

*What is the most likely organism?*

- 1- *Neisseria meningitidis*
- 2- Herpes Simplex Virus type 1
- 3- *Mycobacterium avium intracellulare*
- 4- *Mycobacterium tuberculosis*
- 5- *Streptococcus viridans*

## Answer &amp; Comments

**Answer:** 2- Herpes Simplex Virus type 1

The fever and confusion suggest encephalitis and are often accompanied by fitting.

Temporal lobe changes on the MRI suggest that HSV encephalitis is likely. Treatment is with high dose IV acyclovir 10-15 mg/kg tds.



[ Q: 790 ] MRCPass - Infectious disease

A 30 year university lecturer develops fevers, myalgia, lethargy and joint pains over 5 days, after contact with a colleague with a similar illness. She has a temperature of 39 °C. On examination, she has a cheek rash, synovitis of the hand and knee joints, and palpable lymph nodes in the cervical area.

*What is the likely diagnosis?*

- 1- Infectious mononucleosis
- 2- Lyme disease
- 3- Listeriosis
- 4- Leptospirosis
- 5- Parvovirus B19

## Answer &amp; Comments

**Answer:** 5- Parvovirus B19

Parvovirus infection or fifth's disease can cause the 'slapped cheek syndrome'.

There is a cheek rash with swollen in the wrist, hands and knees. Diagnosis can be confirmed with an IgM antibody to parvovirus B19.



[ Q: 791 ] MRCPass - Infectious disease

A 34 year old patient has a CD4+ count of 80/mm. He has had a generalised seizure recently. An MRI scan is performed, it shows multiple 1 cm white matter lesions.

*Which of these diagnoses is likely?*

- 1- Progressive multifocal leukoencephalopathy
- 2- Demyelination
- 3- Calcified tubers

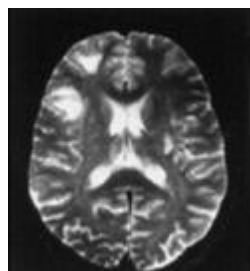
4- Behcet's disease

5- Systemic lupus erythematosus

#### Answer & Comments

**Answer:** 1- Progressive multifocal leukoencephalopathy

Progressive multifocal leukoencephalopathy (PML) is caused by the JC virus, and causes white matter lesions in the brain. A CD4+ of 90/mm (<400) is low and suggests HIV infection. Anti-retroviral therapy is the main treatment for PML.



Multifocal areas of demyelination in PML



[ Q: 792 ] MRCPass - Infectious disease

A 20 year old student returns from a backpacking trip in Nepal. He had a 3 week history of diarrhoea with associated weight loss. There was no blood in his stools.

*What is the likely infective organism?*

- 1- Giardia lamblia
- 2- Shigella flexneri
- 3- Yersinia enterocolitica
- 4- Escherichia coli
- 5- Salmonella typhi

#### Answer & Comments

**Answer:** 1- Giardia lamblia

Giardiasis is most likely as it presents as chronic diarrhoeal illness (without blood) due to duodenal infestation. The rest of the organisms cause more acute diarrhoea,

salmonella and shigella diarrhea are associated with blood.



Giardia



[ Q: 793 ] MRCPass - Infectious disease

A 30 year old man presents with fevers, malaise and a cough. There was associated myalgia. He is a type 1 diabetic. He works in a water purifier factory, and legionella infection is suspected.

*Which of the following tests is most practical for confirming the diagnosis?*

- 1- Serum Immuno Fluorescent Antibody
- 2- Sputum Immuno Fluorescent Antibody
- 3- Sputum microscopy and culture
- 4- Urinary antigen
- 5- PCR for legionella DNA

#### Answer & Comments

**Answer:** 4- Urinary antigen

The urine antigen test is a rapid, relatively inexpensive, and practical test for the detection of L pneumophila antigen excreted in the urine or present in pleural fluid. Direct fluorescent antibody (DFA) staining is a rapid test that can be performed on respiratory samples and tissue and requires only 2-4 hours for results. It is very specific but not sensitive, hence a negative result does not rule out legionella infection. PCR is not widely available.



[ Q: 794 ] MRCPass - Infectious disease

A 75 year old man presents with sudden onset of weakness of his right arm on a background of a 6 week history of lumbar back pain, weight loss, fever and night sweats.

Blood tests show :

Hb 9.9 g/dL

white cell count 13.5

platelets 470

erythrocyte sedimentation rate (ESR) 100 mm/hr

creatinine 195 micromol/L

calcium 2.45 (2.25-2.7) mmol/l

phosphate 0.22 (0.8-8) pmol/l

IgA 1.3(0.5-4.0) g/l

IgG 14 (5.0-13.0) g/l

IgM 2.7 (0.3-2.2) g/l

Urine dipstick - microscopic haematuria

*What is the most likely diagnosis?*

- 1- Endocarditis
- 2- Secondary syphilis
- 3- Paget's disease
- 4- Tuberculosis
- 5- Myeloma

Answer & Comments

Answer: 1- Endocarditis

Infective endocarditis with associated osteomyelitis would explain the clinical picture of back pains, raised inflammatory markers and dipstick positive for blood.

The mildly raised immunoglobulins would go with infection rather than myeloma.



[ Q: 795 ] MRCPass - Infectious disease

disease

A 17-year-old female student from an inner-city high school presented to her general practitioner requesting a first prescription for the oral contraceptive pill. The patient began sexual activity 6 months previously, had had five sexual partners and never used condoms. She had no genital symptoms.

*What is a urethral swab most likely to grow ?*

- 1- Syphilis
- 2- Chlamydia trachomatis
- 3- Ureaplasma
- 4- Klebsiella
- 5- Trichomonas vaginalis

Answer & Comments

Answer: 2- Chlamydia trachomatis

Chlamydia is the commonest organism causing non gonococcal urethritis.

Urethritis can be caused by a number of organisms, including *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, *Ureaplasma urealyticum*, *Mycoplasma genitalium*, *Trichomonas vaginalis*, *Herpes simplex virus*, and *Candida albicans*. About half of all men and three-quarters of all women who have chlamydia have no symptoms and do not know that they are infected. Urethritis can cause dysuria eg. a burning sensation. Doxycycline or Azithromycin are the treatment of choice.



[ Q: 796 ] MRCPass - Infectious disease

A 25 year old secretary comes to the clinic complaining of fevers, crampy abdominal pains and diarrhoea. She has returned from Turkey on a holiday. Whilst there, she visited two spas and spent a long time in jacuzzis.

*Which of the following organisms might be isolated from stool culture?*

- 1- Vibrio cholerae
- 2- Cryptosporidium
- 3- Salmonella
- 4- Shigella
- 5- Actinomyces

#### Answer & Comments

Answer: 2- Cryptosporidium

Cryptosporidium is a protozoan which is commonly water borne spread. Swimming in hot tubs and pools, lakes, ponds are risk factors. It can also be spread via uncooked food. Treatment is conservative in adults, whilst the drug nitazoxanide is licensed for treatment in children age < 12. Symptoms typically last for 1-2 weeks.



[ Q: 797 ] MRCPass - Infectious disease

An 18 year old man has recently returned from Kruger National Park in South Africa. He has a fever, headaches and arthralgia. He has a small black ulcer on the inner arm and a widespread maculopapular rash.

Investigations show :

Hb 11.5 g/l

WBC  $6.6 \times 10^9/L$

LDH 680 iu/l

Plts  $115 \times 10^9/L$

*What is the likely diagnosis?*

- 1- Rickettsial infection
- 2- Malaria
- 3- Leishmaniasis
- 4- Schistosomiasis
- 5- Brucella

#### Answer & Comments

Answer: 1- Rickettsial infection

African tick typhus (a form of rickettsial infection) is characterised by fevers, rash (which may be maculopapular or petechial) and an eschar at the site of tick bite (the bite is often not noticed by the patient). Rickettsial infection is confirmed serologically with acute and convalescent titres. Other examples of rickettsial infection include Rocky Mountain spotted fever and louse borne typhus. The treatment of choice is doxycycline.



Eschar of tick typhus



[ Q: 798 ] MRCPass - Infectious disease

A 29 year old banker presents with fever and loss of weight. He has spent several months travelling across the countries around Africa and Asia. He admits that he did not take malarial prophylaxis. On examination he has lymphadenopathy and hepatosplenomegaly. The full blood count shows pancytopenia. Aspirates are taken from bone marrow and Giemsa stained smears of these aspirates show amastigotes.

*Which is the most likely infective organism?*

- 1- Falciparum malaria
- 2- Leishmania donovani
- 3- Leishmania major
- 4- Trypasonoma cruzi
- 5- Trypasonoma brucei

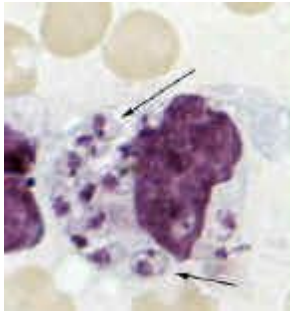
#### Answer & Comments

Answer: 2- Leishmania donovani

This patient has clinical features of visceral leishmaniasis and aspirates have



demonstrated amastigotes confirming the diagnosis. Visceral leishmaniasis is caused by parasites of the *Leishmania donovani*.



L donovani amastigotes



[ Q: 799 ] MRCPass - Infectious disease

A 45 year old man has become progressively more unwell since return from a business trip to Ghana 2 days ago.

He had a high fever on admission, but was not confused. A malarial film shows 12% parasitaemia with *Plasmodium falciparum*.

*What is the most appropriate treatment option?*

- 1- Atovaquone
- 2- Chloroquine
- 3- Proguanil
- 4- Quinine
- 5- Co-trimoxazole

#### Answer & Comments

Answer: 4- Quinine

In severe *falciparum* malaria either intravenous quinine or artesunate should be administered. Atovaquone is a component of Malarone (also proguanil) which is licensed in uncomplicated *falciparum* malaria. This patient may also be considered for exchange transfusion (considered in parasitaemia >20% or >10% with organ failure).



[ Q: 800 ] MRCPass - Infectious

#### disease

A 65 year old man has been admitted to the ward following a myocardial infarction. He is a mild diabetic and is hypertensive but both these conditions are well controlled.

Seven days after admission the patient develops fever, tachycardia and tachypnoea. On auscultation of his chest crepitations are heard over both lung bases. Chest X-ray demonstrates bilateral basal pulmonary infiltrates.

Empirical antibiotic treatment for this condition will be based on the assumption that the most likely causative organisms are:

- 1- Gram-negative organisms
- 2- *Staphylococcus aureus*
- 3- *Pneumococcus*
- 4- *Mycoplasma*
- 5- *Neisseria meningitidis*

#### Answer & Comments

Answer: 1- Gram-negative organisms

Gram-negative organisms are the most likely cause of hospital-acquired pneumonia. Examples are *Klebsiella*, *Pseudomonas*, *Enterobacter*, *Serratia*. Powerful antibiotics used against these organisms include the fourth-generation cephalosporins, carbapenems, ciprofloxacin alone or in combination with an aminoglycosides (entamicin or tobramycin).



[ Q: 801 ] MRCPass - Infectious disease

Two days after returning from a 1-week trip around Thailand, a 30 year old woman presents with sudden onset of fever, headache and myalgia. Three days after her symptoms started she develops a generalized erythematous rash. Her investigations show :

Hb is 12 g/ dl

WCC  $2.2 \times 10^9 / l$

platelets  $75 \times 10^9 / l$

*What is the most likely diagnosis?*

- 1- Hepatitis C
- 2- Dengue fever
- 3- Tick-borne encephalitis
- 4- Syphilis
- 5- Malaria

#### Answer & Comments

Answer: 2- Dengue fever

This presentation is typical presentation of someone with dengue fever which has an incubation period of 5 to 8 days. Dengue fever is a condition caused by an RNA virus (arbovirus), which is common in India, South East Asia and the Pacific. Spread is by mosquitos.



[ Q: 802 ] MRCPass - Infectious disease

A 70 year old white man has spent several years in Greece where he was exposed to farm animals and also had a history of household tuberculosis (TB) contact.

He was referred for pain, swelling and decreased function of his left knee prosthesis which was implanted 5 years ago. The knee was aspirated and a tissue biopsy was performed. Sections of soft tissue showed chronic synovitis with a histiocytic reaction and a rare focus of epithelioid granulomas.

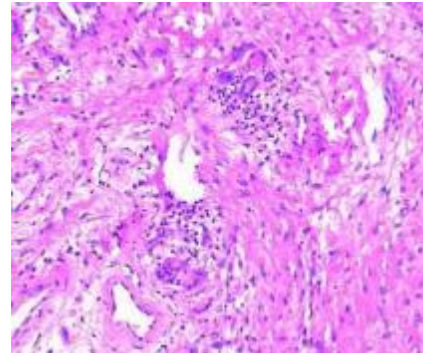
*What organism is likely to be cultured?*

- 1- Staphylococcus aureus
- 2- Streptococcus faecalis
- 3- Chlamydia
- 4- Mycobacterium bovis
- 5- Neisseria gonorrhoeae

#### Answer & Comments

Answer: 4- Mycobacterium bovis

Mycobacterium bovis infection can be transmitted from contact with farm animals. Complications include granulomatous prostatitis, hepatitis, skin abscess, ureteral obstruction and epididymo-orchitis.



Epithelioid granulomas



[ Q: 803 ] MRCPass - Infectious disease

A 45 year old man has a history of multiple episodes of sudden, abdominal pain and back pains.

A haemoglobin electrophoresis shows 95% Hb S, 4% Hb F, 1% Hb A2. He also has increasing pain in his right groin radiating to the anterior aspect of the thigh. His temperature was 38°C. An X ray reveals irregular bony destruction of the femoral head.

*Which is the most likely organism to be responsible?*

- 1- Mycoplasma
- 2- Yersinia pestis
- 3- Salmonella
- 4- Candida
- 5- Moraxella

#### Answer & Comments

Answer: 3- Salmonella

Salmonella osteomyelitis is frequently seen in patients with sickle cell anemia. Patients with sickle cell anemia also exhibit increased susceptibility to other common infectious

agents, including *Mycoplasma pneumoniae*, *Staphylococcus aureus*, and *Escherichia coli*.



[ Q: 804 ] MRCPass - Infectious disease

A 12 year old girl with sickle cell presents with abdominal pains and generalised lethargy. On examination, she was moderately unwell and was noted to be pale. Her temperature was 37°C. Her blood tests show Hb 4.0 g/dl, WCC  $4 \times 10^9/L$ , platelets  $50 \times 10^9/L$ , urea 6  $\mu\text{mol/l}$ , creatinine 90  $\mu\text{mol/l}$ , sodium 140 mmol/l, potassium 4.2 mmol/l, bilirubin 28  $\mu\text{mol/l}$ .

*Which one of these infections is likely?*

- 1- Hepatitis B
- 2- CMV
- 3- EBV
- 4- Parvovirus B19
- 5- Polio virus

#### Answer & Comments

Answer: 4- Parvovirus B19

In sickle cell disease, infection with parvovirus can cause aplastic anaemia, as seen in this case, where there is a pancytopenic picture in the full blood count profile. The condition is self limiting and the patient may recover within one to Two weeks.



[ Q: 805 ] MRCPass - Infectious disease

A 30 year old man presented with bloody diarrhoea. This started 2 days ago. He returned from a business trip to Egypt recently 1 week ago.

*What is the most likely causative organism?*

- 1- Cholera
- 2- E coli
- 3- Giardiasis
- 4- Shigella

5- Cryptosporidiosis

#### Answer & Comments

Answer: 4- Shigella

The common causes of bloody diarrhoea include *Salmonella*, *Shigella*, *Campylobacter* and amoebiasis. *E. coli* type E 0157 can also cause bloody diarrhoea with Haemolytic uraemic syndrome.



[ Q: 806 ] MRCPass - Infectious disease

A 70 year old man presents to casualty with a fever and headache. On examination he is confused, has neck stiffness and a right 6th cranial nerve palsy. He has no visible rash.

Investigations show :

CSF Protein 3 g/L

CSF Glucose 1.1 (3.3 to 4.4 mmol/l), plasma glucose 5 mmol/l

CSF Microscopy 350 white cells, predominantly lymphocytes

Serum VDRL positive and TPHA is negative

*The most likely diagnosis is:*

- 1- Meningococcal meningitis
- 2- Herpes simplex encephalitis
- 3- Listeria meningitis
- 4- Lymphocytic meningitis
- 5- Tuberculous meningitis

#### Answer & Comments

Answer: 5- Tuberculous meningitis

In TB meningitis, the prodrome is nonspecific, including headache, vomiting, photophobia and fever. Cranial nerve palsies can occur. The duration of presenting symptoms may vary from 1 day to 9 months. CSF typically shows elevated protein level, markedly low glucose, and a pleocytosis, initially polymorphs then lymphocytes.

In this case, VDRL may be a sign of previous syphilis or may be false positive. TPHA is much more specific, hence since it is negative in this case, syphilis infection is unlikely.

The best antimicrobial agents in the treatment of TBM include isoniazid (INH), rifampicin (RIF), pyrazinamide (PZA), and streptomycin (SM), all of which enter CSF readily in the presence of meningeal inflammation. Ethambutol (EMB) is less effective in meningeal disease unless used in high doses.



[ Q: 807 ] MRCPass - Infectious disease

A 45 year old patient presents with meningism. There is no past medical history. CT scan was normal and he had the following CSF results:

150 X 10<sup>6</sup>/ml white cells (90% lymphocytes)

protein was 6g/l

glucose 2.2 mmol/l

Microscopy revealed no gram positive organisms and no Acid fast bacilli were seen.

*Which is the next best test?*

- 1- TB PCR of the cerebrospinal fluid
- 2- CSF cytology
- 3- Heaf test
- 4- Herpes viral serology
- 5- Blood cultures

Answer & Comments

Answer: 1- TB PCR of the cerebrospinal fluid

A CSF lymphocytosis and low glucose points towards TB meningitis.

Despite no AFBs being seen, the TB PCR is a rapid way to confirm his diagnosis definitively.



[ Q: 808 ] MRCPass - Infectious disease

A 40 year old lady presents with a cellulitis in the left leg. She had a laceration to the area 3 days ago. Blood cultures grow a gram-negative rod subsequently identified as *Pasteurella multocida*.

*What was the most likely cause of the penetrating injury?*

- 1- Snake bite
- 2- Cat bite
- 3- Spider bite
- 4- Bee sting
- 5- Scorpion bite

Answer & Comments

Answer: 2- Cat bite

*Pasteurella multocida* is found in the snouts of both dogs and cats. Soft tissue infection results following bites and may progress to tenosynovitis, osteomyelitis or lymphangitis depending on the site of the bite. Drug therapy is with penicillin.



[ Q: 809 ] MRCPass - Infectious disease

An 18 year old man has been working on a farm during the summer holidays from university. He is now unwell.

On examination his BP is 115/65 mmHg and temperature is 38 C. He has jaundice and mild hepatosplenomegaly.

Blood tests reveal: Hb 13.5 g/dl, WCC 11.2 x 10<sup>9</sup>/L, platelets 225 x 10<sup>9</sup>/L, sodium 137 mmol/l, potassium 4.2 mmol/l, urea 14 μmol/l, creatinine 180 μmol/l.

*Which test is most likely to reveal the underlying diagnosis?*

- 1- Brucella antibodies
- 2- Paul Bunnell test
- 3- Leptospira antibodies

4- MRI to look for cystic lesions

5- HIV test

#### Answer & Comments

Answer: 3- Leptospira antibodies

Leptospirosis is spread by rodents, those at risk are farm workers and those working at sewers. It can lead to fevers, jaundice, haemoptysis and renal impairment. The diagnosis is confirmed by dark field microscopy of urine and serologically.



Spiral shaped Leptospira interrogans



[ Q: 810 ] MRCPass - Infectious disease

A 45 year old African American male presents with sudden-onset chest pain which he associated with a high fever, dry cough, and shortness of breath. He was found to have low oxygen saturation between 80-90%. Oral examination revealed moist mucosa but mild thrush was noted on tongue. Respiratory exam showed fine crackles in lower one-third of bilateral bases.

A chest X-ray revealed prominent interstitial markings. Blood tests reveal a white cell count of  $3 \times 10^9/L$ .

*What is the likely diagnosis?*

- 1- Asthma
- 2- Allergic Bronchopulmonary Aspergillosis
- 3- Legionella Pneumonia
- 4- Histoplasmosis

5- Pneumocystis pneumonia

#### Answer & Comments

Answer: 5- Pneumocystis pneumonia

The diagnosis is pneumocystis pneumonia. HIV infection is suggested by the low white cell count and oral candidiasis. Dry cough, fever and tachypnoea are typical in PCP. The organism lies in the alveolar space (foam), causing hypoxia and a low transfer factor. Typically there are no crackles, although it may occasionally be present.



Pneumocystis pneumonia



[ Q: 811 ] MRCPass - Infectious disease

A 30 year old lady presents with headache and neck stiffness. Her temperature is 38.5°C, BP 100/65 and she has a petechial rash in the thigh. CSF examination reveals gram negative diplococci.

*Which is the best antibiotic therapy?*

- 1- Gentamicin
- 2- Flucloxacillin
- 3- Cefuroxime
- 4- Ciprofloxacin
- 5- Benzylpenicillin

#### Answer & Comments

Answer: 5- Benzylpenicillin



The diagnosis is meningococcal meningitis (it would be pneumococcal meningitis if gram positive diplococci were seen). Intravenous ceftriaxone or benzylpenicillin are treatment of choice.



Meningococcal Rash



[ Q: 812 ] MRCPass - Infectious disease

A 32 year old woman was admitted to hospital with cough and breathlessness. She had been well until two weeks previously, when she developed headache and nausea followed by a cough. Her general practitioner prescribed amoxycillin with clavulanic acid on the day of admission. She had no history of foreign travel and kept no pets.

On admission she was unwell and pyrexial. The main abnormal signs were a raised heart rate (140 beats/min),

and respiratory rate (32 breaths/min). There were left basal crackles. Chest x ray showed mild shadowing.

*Which one of the following tests should be sent for making a diagnosis of legionella infection?*

- 1- Serum immunofluorescent antibody
- 2- Sputum immunofluorescent antibody
- 3- Sputum culture
- 4- Urinary antigen
- 5- Blood cultures

### Answer & Comments

Answer: 4- Urinary antigen

The urine antigen test (a radioimmunoassay) is a rapid, relatively inexpensive, and practical test for the detection of *L pneumophila* antigen excreted in the urine or present in pleural fluid.



[ Q: 813 ] MRCPass - Infectious disease

A 60 year old man presented with fatigue. He gave a history of Two similar episodes of extreme fatigue in the past five years. During one of these episodes, elevated liver enzymes were found. An examination showed that he was otherwise healthy. He was not on medications, and he denied drinking. He had no known family history of liver disease.

Laboratory Results:

AST: 349 U/l

ALT: 452 U/l

Total bilirubin: 70 umol/l

HBsAg: positive

Anti-HCV: negative

After several months, he was followed up by a gastroenterologist, his symptoms had resolved. Repeat testing at this time showed the following:

Laboratory Results:

AST: 55U/l

ALT: 68 U/l

Total bilirubin: 25 umol/l

HBeAg: negative

Anti-HBe: positive

HBV DNA: 125,000 copies/mL

*What is the diagnosis?*

- 1- Superimposed hepatitis E
- 2- Superimposed hepatitis D
- 3- Acute antigen negative hepatitis B



4- Chronic antigen negative hepatitis B

5- Hepatitis B in remission

#### Answer & Comments

Answer: 4- Chronic antigen negative hepatitis B

This is a case of patients with E-antigen negative chronic Hepatitis. Despite E-antigen being negative, these patients can continue to have active HBV DNA level and active liver disease.



[ Q: 814 ] MRCPass - Infectious disease

A 52 year man enquired about whether it was advisable to have vaccination prior a holiday abroad. He had asthma treated with long term steroids. Frequently, courses of Prednisolone in excess of 30mg daily were given.

*Which one of the following vaccinations is contraindicated in the patient?*

- 1- Hepatitis B
- 2- Diphtheria toxoid
- 3- Yellow fever
- 4- Meningococcus
- 5- Tetanus toxoid

#### Answer & Comments

Answer: 3- Yellow fever

The live vaccines are:

- BCG
- Mumps
- Measles
- Rubella
- Yellow fever
- Smallpox



[ Q: 815 ] MRCPass - Infectious

#### disease

An 60 year lady has a 3 month history of dry cough. She feels sw eaty at night. Her temperature is 39 C and chest X ray shows a cavitating lesion in the right upper lobe. Induced sputum was attempted but was unsuccessful.

*Which of the following investigations would be useful in establishing the cause of this lesion?*

- 1- CT of the chest
- 2- Ultrasound of the lesion
- 3- Bronchoscopy
- 4- Aspergillus serology
- 5- Percutaneous biopsy

#### Answer & Comments

Answer: 3- Bronchoscopy

This patient is likely to have tuberculosis, but induced sputum has been unsuccessful to send for AFBs. The best way of obtaining a diagnosis is to get a bronchoscopy with bronchial washings to send for TB culture.



[ Q: 816 ] MRCPass - Infectious disease

A 35 year old female is referred due to positive serology for syphilis. She gives a history of treatment for syphilis 5 years ago. Tests show a positive venereal disease reference laboratory (VDRL) titre of 1:128 and a positive Treponema pallidum haemagglutination assay (TPHA) titre of 1:1024.

*Which of the following explanations is most consistent with these data?*

- 1- Tertiary syphilis
- 2- Active syphilis reinfection
- 3- Inadequate previous treatment
- 4- Pregnancy
- 5- Superimposed gonorrhoea treatment

## Answer &amp; Comments

**Answer:** 2- Active syphilis reinfection

Successful therapy for syphilis leads to a steady fall in the VDRL or rapid plasma reagin (RPR) titre. Following primary disease the VDRL is generally negative within 1 year, and within 2 years for secondary syphilis. A small number of treated patients have a persistently low detectable VDRL.

This patient's high VDRL titre of 1:128 most likely represents recent acquisition of infection - within the past 12 months.



[ Q: 817 ] MRCPass - Infectious disease

A 40 year old man presented 14 days after return from a 6-week field trip to Papua New Guinea. He had a six day history of high fevers and rigors. On the day of presentation, he had become vague and confused. He had taken antimalarials as prophylaxis, but ceased when he found that local people did not take them.

His temperature was 40°C, pulse rate 140 bpm, respiratory rate 28 per minute, and blood pressure 100/60 mmHg.

He had dry mucous membranes, mild jaundice, pallor, splenomegaly and generalised crackles in both lungs.

Full blood examination revealed:

6.5 g/dL

WCC  $2.5 \times 10^9/L$

Platelet  $10 \times 10^9/L$

bilirubin 60  $\mu\text{mol/L}$  (3-20  $\mu\text{mol/L}$ )

lactate dehydrogenase 489 U/L (100-225 U/L)

creatinine 250  $\mu\text{mol/l}$

**What is the likely diagnosis?**

- 1- Leishmaniasis
- 2- Tick bite fever
- 3- Endocarditis
- 4- Falciparum malaria

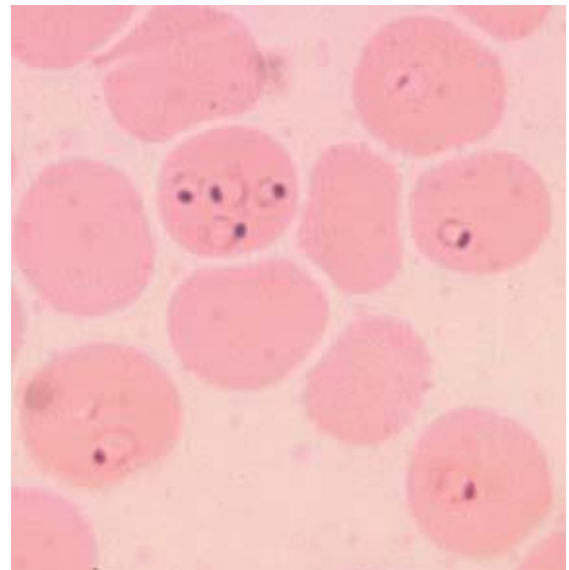
## 5- Viral haemorrhagic fever

## Answer &amp; Comments

**Answer:** 4- Falciparum malaria

This patient has severe malaria suggested by altered consciousness, focal neurological signs, jaundice, oliguria, severe anaemia, hypoglycaemia, hypotension and acidosis.

Severe malaria requires treatment with intravenous quinine.



P. falciparum rings in erythrocytes



[ Q: 818 ] MRCPass - Infectious disease

A 62 year old woman was admitted to the emergency department with deterioration in her level of consciousness. On examination, her pupils were equal and reactive, Kernigs and Brudzinski's signs were positive.

Investigations showed:

CT scan of the head - cerebrovascular disease.

Lumbar puncture was performed and this showed an opening pressure > 25 cmH<sub>2</sub>O.

CSF showed a white cell count in cerebrospinal of 133 (all polymorphs), red blood cell count of 25 (no xanthochromia), and protein level of 0.75 g/l, Glucose 2.5 mmol/l.

*Which is the likely causal organism?*

- 1- Listeria monocytogenes
- 2- Streptococcus pneumoniae
- 3- E coli
- 4- Klebsiella
- 5- Pseudomonas aeruginosa

#### Answer & Comments

Answer: 2- Streptococcus pneumoniae

The commonest cause of bacterial meningitis in the elderly is Strep pneumoniae. The CSF glucose is only slightly low and hence is not consistent with TB meningitis.



[ Q: 819 ] MRCPass - Infectious disease

A 35 year old man develops a fever 7 days post bone marrow transplantation. He is placed empirically on Cefuroxime but remains febrile. After a few days, he develops a few painless, red, papular lesions on his trunk and lower limbs.

Investigation results are:

Hb 10.5 g/dl

MCV 87 fl

WCC  $18 \times 10^9/L$  (50% lymphocytes)

platelets  $130 \times 10^9/L$

ALT 130 (5-35) U/l

AST 95 (1-31) U/l

ALP 140(20-120) U/l,

Bilirubin 35 (1-22)  $\mu\text{mol/l}$

Albumin 36 (37-49) g/l

*What is the likely cause of these lesions?*

- 1- Stevens Johnsons syndrome
- 2- Staphylococcal infection
- 3- Candidal infection
- 4- Graft versus host disease
- 5- Aspergillus infection

#### Answer & Comments

Answer: 4- Graft versus host disease

The presentation of acute graft versus host disease is often a triad of dermatitis, hepatitis, and gastroenteritis, although symptoms may occur alone or in different combinations.

Maculopapular rash may present with the onset occurring within 5-47 days after transplantation. Pruritus involving the palms and soles may precede the rash.

Anaemia and thrombocytopenia are common. The liver is the second most common organ involved. GVHD also manifests as elevated liver transaminases levels. Cholestatic jaundice is common.

Successful therapeutic intervention of life-threatening GVHD is possible, although the consequence can be the development of fatal opportunistic infections. Therefore, the best approach to manage GVHD should be its prevention.



Maculopapular rash seen in Graft versus Host Disease.



[ Q: 820 ] MRCPass - Infectious disease

A 31 year old patient who is HIV positive has a CD4 count of 200 cells /mm<sup>3</sup>. He has a viral load of 220,000 cells/ml. He is feeling well at present.

*What should be the next management step?*

- 1- Start antiretroviral therapy now
- 2- Start antiretroviral therapy when viral load is > 300,000 cells/ml
- 3- Start antiretroviral therapy when CD4 count is < 100
- 4- Start antiretroviral therapy when CD4 count is < 150
- 5- Start antiretroviral therapy when patient is symptomatic

Answer & Comments

**Answer:** 1- Start antiretroviral therapy now

The general recommendation for considering HAART and best prognosis is to they start when patients' CD4 count is <200 cells/mm<sup>3</sup> or viral load is >10,000 cells/mL.



[ Q: 821 ] MRCPass - Infectious disease

A 45 year old man presents with malaise, weight loss and diarrhoea. On examination his skin is pigmented, his fingers are clubbed. There is cervical and axillary lymphadenopathy. Upper gastrointestinal endoscopy is performed and distal duodenal biopsies demonstrate stunted villi. The lamina propria is distended with multiple periodic acid-Schiff (PAS) positive macrophages.

*The aetiological organism is:*

- 1- Mycobacterium tuberculosis
- 2- Trophyrema whippelli
- 3- Candida albicans
- 4- Giardia lamblia
- 5- Amoeba

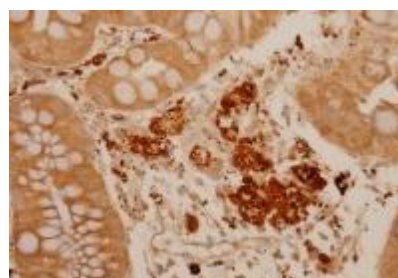
Answer & Comments

**Answer:** 2- Trophyrema whippelli

Whipple's disease typically presents as a gastrointestinal illness caused by the organism Tropheryma whippelli. The illness is characterized by diarrhea, abdominal cramps, and sometimes frank malabsorption. If gastrointestinal disease is prominent, duodenal biopsy is performed, it often yields evidence of Tropheryma whippelli by light microscopy, electron microscopy, or PCR, allowing the diagnosis to be substantiated.

Histopathologically, one sees macrophages containing periodic acid-Schiff (PAS)-positive material. The characteristic rod-shaped intracellular organism is seen by electron microscopy.

Current recommendations are for a two week course of intravenous ceftriaxone, to be followed by one to two years of double-strength oral trimethoprim-sulfamethoxazole.



Periodic acid-Schiff (PAS) stain reveals intensely PAS positive rod shaped and granular inclusions in macrophages



[ Q: 822 ] MRCPass - Infectious disease

A 42 year old patient with hepatitis B infection is being considered for therapy in outpatients.

*Which antiretroviral is also used for the therapy of hepatitis B virus (HBV) infection?*

- 1- Lamivudine
- 2- Zidovudine
- 3- Nevirapine

4- Indinavir

5- Saquinavir

## Answer &amp; Comments

Answer: 1- Lamivudine

Lamivudine (3TC) is a nucleoside analogue that inhibits viral DNA synthesis. Those who benefit the most from treatment are chronic hepatitis B infected patients with persistently elevated transaminases who are actively replicating virus (with viral DNA testing positive) and have evidence of chronic hepatitis on liver biopsy. Lamivudine may also be used to suppress hepatitis B infection in patients undergoing liver transplantation or others where immunosuppression is required. Alpha Interferon is the other drug which is currently used to treat hepatitis B.



[ Q: 823 ] MRCPass - Infectious disease

A 32 year old man is referred following a 6 month history of confusion. He is depressed and has frequent mood swings. He also has recurrent, asymmetrical, jerks in all 4 limbs.

*Which of the following investigations is most likely to be useful in reaching a diagnosis?*

1- CT head

2- EMG

3- Chest X Ray

4- Inflammatory markers

5- EEG

## Answer &amp; Comments

Answer: 5- EEG

The presentation of rapid cognitive decline in a young person with myoclonus is suggestive of Creutzfeldt Jakob disease. This may be new variant (in which the EEG is often normal) or sporadic (in which case characteristic EEG abnormalities may be expected). The EEG in

sporadic CJD may show significant abnormalities involving deep brain areas (thalamus) with diffuse, nonspecific changes, developing into stereotyped high voltage components on a slow background.



[ Q: 824 ] MRCPass - Infectious disease

A 35 year old man has returned from a field trip in Malaysia. He now has a fever of 39°C, headache, muscular aches and pains. Examination reveals an erythematous rash on his abdomen and thighs. There was cervical and inguinal lymphadenopathy.

Blood tests show :

Hb 14.0 g/dl

MCV 80 fl

WCC  $7 \times 10^9/L$ platelets  $120 \times 10^9/L$ urea 7  $\mu\text{mol/l}$ creatinine 100  $\mu\text{mol/l}$ 

sodium 142 mmol/l

potassium 4.2 mmol/l

bilirubin 16  $\mu\text{mol/l}$ 

AST 120 U/l

ALP 1500 U/l

albumin 32 g/l

ESR 60 mm/hr

CRP 180 mg/l

*Which of the following infections is likely?*

1- Syphilis

2- Chlamydia

3- Dengue fever

4- Yellow fever

5- Typhoid fever

## Answer &amp; Comments

Answer: 3- Dengue fever



Dengue fever caused by an arthropod borne flavivirus (typically the Aedes mosquito insect). It is present in South East Asia, Africa, Middle East and India. The disease has an incubation period of 7 days. Headaches, retro-orbital pain, musculoskeletal pains and a maculopapular rash can occur. Treatment is conservative with antipyretics and bedrest.



[ Q: 825 ] MRCPass - Infectious disease

An 18 year old girl was studying for examinations together with a friend who was hospitalised 2 days ago with meningitis. The blood cultures in her friend grew meningococcus group A.

*Which of the following actions should be taken towards the girl who was in contact with the patient?*

- 1- Immunisation with meningococcus A vaccine
- 2- Immunisation with meningococcus A and C vaccine
- 3- Immunisation with meningococcus A and C vaccine, and rifampicin
- 4- Rifampicin only
- 5- Full treatment for meningitis A

#### Answer & Comments

Answer: 3- Immunisation with meningococcus A and C vaccine, and rifampicin

Immunisation is available against strains A and C of this bacteria, however strain B is the most often implicated in meningococcal meningitis. Due to close contact, this girl should be given both available vaccines and also rifampicin. Apart from rifampicin, minocycline and ceftriaxone can also be used for prophylaxis.



[ Q: 826 ] MRCPass - Infectious disease

A 45 year old pig farmer is admitted to A+E following Two generalised seizures. He has no significant neurological history. On examination, he had no focal neurological signs. A CT scan of the head shows periventricular cystic lesions. There is eosinophilia of 10%.

*Which of the following infective organisms is likely?*

- 1- Toxocara canii
- 2- Ascaris lumbricoides
- 3- Schistosoma mansoni
- 4- Yersinia enterocolitica
- 5- Taenia solium

#### Answer & Comments

Answer: 5- Taenia solium

Toxocariasis is commonly passed on from dog and cat faeces. Ascariasis is roundworm infection which commonly causes abdominal symptoms. Yersinia is a bacterial infection spread from half cooked meat and unpasteurised milk, causing abdominal symptoms and diarrhoea. Taenia solium is the pork tapeworm which causes the condition cysticercosis described above. Cysts are commonly found in the brain and seizures are common.



Taenia Solium





[ Q: 827 ] MRCPass - Infectious disease

A 55 year old man has lived in Saudi Arabia for several years but moved to the UK. He presents with severe right hypochondrial pain, nausea, vomiting, fever, cough and chest pain of one day duration.

Physical examination revealed tachypnoea, tachycardia and a temperature of 39 C. Chest examination showed dullness, diminished air entry and bronchial breathing in the right lower zone of the chest posteriorly. There were tenderness and guarding in the right upper quadrant of the abdomen and the right lower intercostal spaces.

A chest x ray showed consolidation of the right lower lobe of the lung with pleural effusion. Abdominal ultrasound several cystic lesions in the liver.

*What is the likely diagnosis?*

- 1- Polycystic liver diseases
- 2- Hydatid disease
- 3- Tuberculosis
- 4- Sarcoidosis
- 5- HIV infection

Answer & Comments

Answer: 2- Hydatid disease

Hydatid disease due to *Echinococcus granulosus* (found in cattle and sheep-raising regions) of the world such as Central Europe, the Mediterranean countries, the Middle East, South America, and South Africa. Hydatid cysts are known commonly to affect the liver and lung.

The treatment of hydatid cysts is surgical. Pre- and post-operative 1-month courses of Albendazole and 2 weeks of Praziquantel should be given.



Hydatid cysts in the liver



[ Q: 828 ] MRCPass - Infectious disease

A 28 year old man has recently been diagnosed as HIV-positive. In view of a high viral load and low CD4 count he was commenced on septrin (960 mg alternate days), Zidovudine 250 mg b.d., Lamivudine 150mg b.d. and Abacavir 300mg b.d. 8 weeks into this regimen he becomes progressively unwell over 3 days - he develops a pyrexia of 40°C, an erythematous macular rash affecting the limbs and trunk, nausea, vomiting and abdominal pains. He has also become significantly more breathless this evening.

*What immediate course of action is advisable?*

- 1- Stop zidovudine
- 2- Initiate steroids
- 3- Stop septrin
- 4- Stop abacavir
- 5- Stop lamivudine

Answer & Comments

Answer: 4- Stop abacavir

Abacavir hypersensitivity occurs in 5% of individuals. It may present without a rash and should be considered in the differential diagnosis of any febrile illness after commencing abacavir. Abacavir should be stopped and an alternative anti-retroviral agent commenced to maintain triple combination therapy.



[ Q: 829 ] MRCPass - Infectious disease

A 40 year old man has spent a year in South America working in the computer industry. He develops fevers, night sweats, vomiting and pain in the right upper quadrant. Blood tests reveal a raised white cell count but not eosinophil count. An CT of his abdomen shows a large cyst.

*Which is the best treatment?*

- 1- Hepatectomy of hepatoma
- 2- Surgical removal of aspergilloma
- 3- Albendazole for hydatid cyst
- 4- Metronidazole for amoebic liver abscess
- 5- Quadruple therapy for TB

Answer & Comments

Answer: 4- Metronidazole for amoebic liver abscess

Amoebiasis is caused by *Entamoeba histolytica* is spread by faeco oral route. It can present months or a year after infection. RUQ and referred pain to the shoulders as well as with systemic symptoms are common presentations.



[ Q: 830 ] MRCPass - Infectious disease

A 78 year old woman who is resident in a nursing home has been treated by her GP for pneumonia 2 weeks ago, and now presents with diarrhea and abdominal pains. The diarrhoea is occurring 8 times a day and has a greenish colour.

*What is the best treatment for her?*

- 1- Metronidazole
- 2- Ciprofloxacin
- 3- Gentamicin
- 4- Erythromycin
- 5- Tazocin

Answer & Comments

Answer: 1- Metronidazole

The diagnosis is likely to be pseudomembranous colitis. *C. difficile* toxin should be sent off. As the index of suspicion is high, she should be given metronidazole.



[ Q: 831 ] MRCPass - Infectious disease

A 40 year old woman in otherwise good health, was cleaning debris on her land and was exposed to animal feces. The patient was removing rocks when she accidentally grasped a piece of barbed wire concealed by the murky water. This led to four cuts to the palmar surface of four fingers on her right hand. She cleaned the injury with an antibacterial soap and immediately continued working.

Seven days later, she presented to the emergency room (ER). Left side of her jaw became painful and badly swollen. She had inability to open her mouth, and difficulty breathing.

*What is the most likely infective organism?*

- 1- Clostridium tetani
- 2- Rabies virus
- 3- Ross River virus
- 4- Staphylococcus aureus
- 5- Streptococcus pyogenes

Answer & Comments

Answer: 1- Clostridium tetani

Tetanus, sometimes known as lockjaw is a disease manifested by uncontrolled spasms, due to the introduction of Clostridium tetani toxin into tissues. Skin punctures, contaminated wounds with soil, dust, burns have a role in the development of the disease.

The spores produce a neurotoxin (tetanospasmin) which causes severe spasm

all over the body leading to painful muscle contraction and laryngeal spasm which interfere with breathing and muscle tears.

The incubation period is typically between 1-2 weeks. Vaccination with tetanus toxoid has been proved to be effective. Booster immunization to those who have been injured is advisable, especially for those whose last immunization received was 10 years or more. The conventional treatment of severe tetanus which is supportive along with penicillin, is still the most effective treatment.

Risus sardonicus is an abnormal, sustained spasm of the facial muscles that is most often observed as a symptom of tetanus. Trismus is a pathological, sustained spasm of the neck and masseter (jaw) muscles that can make it difficult or impossible to open the mouth, also most often associated with tetanus.



[ Q: 832 ] MRCPass - Infectious disease

A 40 year old diabetic lady presents with a hot swollen left leg. On examination has a temperature of 39°C and her leg is tender to compression. She was treated with intravenous flucloxacillin and benzylpenicillin. However, the erythema has spread even further after 3 days, she is persistently hypotensive with a systolic BP of < 90 mmHg.

*Which of the following antibiotics should be added?*

- 1- Gentamicin
- 2- Tazocin
- 3- Chloramphenicol
- 4- Clindamycin
- 5- Amoxycillin

#### Answer & Comments

Answer: 4- Clindamycin

There is suspicion that this lady may have Streptococcus A infection with toxic shock

syndrome. Clindamycin has effects of reducing protein synthesis and exotoxin production by the bacteria.



[ Q: 833 ] MRCPass - Infectious disease

A 35 year old man has travelled to South East Asia 2 weeks ago. He presents to the hospital with fevers, diffuse rash and lethargy.

The rash was a widespread maculopapular rash affecting the palms of his hands and soles of feet. There was also a rash on the face, mouth ulcers and exudative pharyngitis.

He also had several raw, red, mouth ulcers.

*What is the most likely infection?*

- 1- Measles
- 2- Lyme disease
- 3- HIV
- 4- Syphilis
- 5- Tuberculosis

#### Answer & Comments

Answer: 3- HIV

Both seroconversion of HIV and secondary syphilis are possibilities. However, seroconversion can occur in 2 - 4 weeks of infection, but secondary syphilis usually occurs 2-4 months after. Primary syphilis would present within 2 weeks with a chancre.



Rash in seroconversion illness



[ Q: 834 ] MRCPass - Infectious

## disease

A 45 year old man presented with a cough and night sweats. He had CXR changes showing upper zone fibrosis.

Chemotherapy was commenced (rifampicin, isoniazid and pyrazinamide). Two weeks later he develops stridor.

Repeat CXR shows enlarged hilar lymph nodes compressing on the bronchi.

*Which is the best management strategy?*

- 1- Add ethambutol
- 2- Mediastinoscopy
- 3- Surgical decompression
- 4- Dapsone
- 5- Prednisolone

## Answer &amp; Comments

Answer: 5- Prednisolone

The patient has mediastinal lymphadenitis with evidence of bronchial compression.

Steroids are highly effective in reducing lymphadenopathy in this situation and should be the first option.



[ Q: 835 ] MRCPass - Infectious disease

A 35 year old man is unwell and comes to the hospital. He complains of a headache and backache that started suddenly the previous afternoon with fever and chills.

His temperature is 39°C, heart rate is 100/min, respiratory rate is 20/min, and blood pressure is 110/70 mm Hg.

On examination, he is unwell. There are several small erythematous macular lesions on the oral mucosa. There are also small vesicles with the majority on his face, forearms, palms, and legs consistent with a centrifugal rash.

They appear to be deeply embedded and firm. A few lesions are on his trunk.

*What is the most likely diagnosis?*

- 1- Smallpox
- 2- Chickenpox
- 3- Influenzae
- 4- Icthyosis
- 5- Shingles

## Answer &amp; Comments

Answer: 1- Smallpox

Chickenpox, which is the more common disease, causes a rash which is typically central, and does not affect the hands and feet.

The smallpox rash is more distal and causes deep lesions which leave scars. The criteria for smallpox include:

- (1) a centrifugal distribution of lesions, with the first lesions on the oral mucosa or palate, face, or forearms
- (2) a toxic or moribund appearance
- (3) the slow evolution of lesions of 1-2 days per stage
- (4) lesions that appear on the palms and soles

Smallpox is caused by the variola virus (genus Orthopoxvirus). Patients exposed to the most common form of smallpox, variola major, will have a symptom-free incubation period of 7-17 days, with an average of 12 days.



Smallpox rash



[ Q: 836 ] MRCPass - Infectious disease

A 55 year old woman has recently travelled to Spain and developed watery diarrhoea.

*Which of the following is the commonest world wide cause of traveller's diarrhoea?*

- 1- E coli
- 2- Giardia
- 3- Shigella
- 4- Salmonella
- 5- Campylobacter

Answer & Comments

Answer: 1- E coli

Traveller's diarrhoea is an extremely common occurrence, affecting up to half of travellers to high risk areas such as Africa, Asia and South America. The commonest infective cause world-wide is Escherichia coli. Other bacterial causes include Shigella, Salmonella and Campylobacter, all of which can cause dysentery (diarrhoea with blood).



[ Q: 837 ] MRCPass - Infectious disease

A lady who is 25 years of age, presents with a headache, neck stiffness and photophobia. She was been treated with ceftriaxone, and also with ampicillin added.

*What organism is ampicillin intended to cover in this case?*

- 1- Klebsiella
- 2- Meningococcus group B
- 3- Meningococcus group C
- 4- Listeria
- 5- Enterococci

Answer & Comments

Answer: 4- Listeria

Listeria can cause disease in the immunosuppressed (including pregnant women). Ampicillin is the drug of choice to cover listeria in addition to ceftriaxone (which covers strep pneumoniae and meningococci).



[ Q: 838 ] MRCPass - Infectious disease

A 60 year old woman who had a long history of alcohol abuse presents with diarrhoea and back pain. She had recently had an iv cannula for a drip following a drunken episode. On examination she had a fever of 39°C.

*What is the likely diagnosis?*

- 1- Endocarditis
- 2- Pancreatitis
- 3- Staphylococcal discitis
- 4- Diverticulitis
- 5- Subacute bacterial peritonitis

Answer & Comments

Answer: 3- Staphylococcal discitis

Staphylococci are skin organisms which can be introduced insertion of lines (cannulas or central lines). This may lead to discitis which can cause back pain or endocarditis (which would present differently).



[ Q: 839 ] MRCPass - Infectious disease

A 45 year old man presents 2 weeks after returning from a holiday in Tanzania. He has a serpiginous rash on the finger and a low - grade fever.

*Which of the following is the most likely diagnosis?*

- 1- Group-A Streptococcal infection
- 2- Cutaneous myiasis
- 3- Cutaneous larval migrans
- 4- Rickettsial chancre

## 5- Trypanosomal chancres

## Answer &amp; Comments

Answer: 3- Cutaneous larval migrans

Cutaneous larva migrans, caused by various *Ankylostoma* (hookworm) species is characterised by a slowly lengthening, serpiginous, intensely itchy rash.



Cutaneous Larval Migrans







## [ Q: 840 ] MRCPass - Haematology

An 8 year old boy with sickle cell disease presents with breathlessness. His Hb is 4.5 g/dl, WCC is  $3 \times 10^9/L$  and platelet count is  $35 \times 10^9/L$ .

*Which organism is likely to be responsible?*

- 1- Coronavirus
- 2- HIV
- 3- HSV
- 4- Parvovirus
- 5- Epstein barr virus

## Answer &amp; Comments

Answer: 4- Parvovirus

Parvovirus B19 is the commonest cause of aplastic crisis in sickle cell anaemia. Recovery should occur within 10 days with conservative treatment.



## [ Q: 841 ] MRCPass - Haematology

A 45 year old man is being investigated for easy bruising and malaise. Investigations reveal:

Haemoglobin 9.5 g/dL

White cell count  $90 \times 10^9/L$

Neutrophils  $45 \times 10^9/L$  (1.5-7)

Lymphocytes  $3.5 \times 10^9/L$  (1.5-4)

Myelocytes  $30 \times 10^9/L$

Myeloblasts  $3 \times 10^9/L$

Platelet count  $750 \times 10^9/L$

*Which of the following diagnosis is likely?*

- 1- Acute myeloid leukaemia
- 2- Acute lymphocytic leukaemia
- 3- Chronic myeloid leukaemia
- 4- Chronic lymphocytic leukaemia
- 5- Polycythaemia rubra vera

## Answer &amp; Comments

Answer: 3- Chronic myeloid leukaemia

A high neutrophil count, platelet count points towards myeloid leukaemia.

Acute leukaemia is defined as blast cells comprising 30% (in this case only 10% of myelocytes) of the cell type.

Hence it makes CML more likely than AML.



## [ Q: 842 ] MRCPass - Haematology

A 30 year old lady attends A&E with severe nosebleeds. Her investigations show :

Hb 10.5 g/dl

MCV 80 fl

WCC  $7 \times 10^9/L$

platelets  $3 \times 10^9/L$

Blood film report: No platelet clumps seen. Normal rbc and w bc

Clotting screen normal

*What is the most likely diagnosis?*

- 1- Thrombotic thrombocytopenic purpura
- 2- Haemolytic uraemic syndrome
- 3- Acute lymphoblastic leukaemia
- 4- Disseminated intravascular coagulation
- 5- Immune thrombocytopenia

## Answer &amp; Comments

Answer: 5- Immune thrombocytopenia

As there is no abnormality in the red and white blood cells on the blood film, this is most likely to be immune thrombocytopenia. Features consistent with a diagnosis of immune thrombocytopenic purpura (ITP) are thrombocytopenia with platelets being normal in size or may appear larger than normal, but uniformly giant platelets (approaching the size of red cells) should be absent. The morphology of red blood cells and white blood cells should be normal.



## [ Q: 843 ] MRCPass - Haematology

A 72 year old lady has recently been found to be anaemic. Further blood tests show :

Hb of 9.2 g/dl

WCC of  $8.0 \times 10^9/L$

platelet count of  $200 \times 10^9/L$

MCV is 104 fl (80-96)

Ferritin is 120  $\mu g/l$  (15-200)

red cell folate is 350  $\mu g/l$  (150-650)

B12 is 400 pmol/l (120-700)

Blood film shows anisocytosis and poikilocytosis

*Which of the following diagnosis is likely?*

- 1- Chronic lymphocytic leukaemia
- 2- Autoimmune haemolytic anaemia
- 3- Sideroblastic anaemia
- 4- Iron deficiency
- 5- Lymphoma

## Answer &amp; Comments

**Answer:** 3- Sideroblastic anaemia

A high MCV with normal folate and B12 levels, normal iron and a blood film showing anisocytosis and poikilocytosis suggests sideroblastic anaemia.



## [ Q: 844 ] MRCPass - Haematology

A 20 year old man presents with acute severe dyspnoea. He had been stung by a wasp several hours ago. On examination, he was hypotensive and had signs of bronchospasm.

*Which one of the following investigations would confirm the type of hypersensitivity reaction?*

- 1- Plasma tryptase level
- 2- ESR

3- Serum IgE level

4- Venom toxin level

5- Complement C3 level

## Answer &amp; Comments

**Answer:** 3- Serum IgE level

Type I hypersensitivity is occurring in this case of anaphylaxis. It takes 30 minutes from time of exposure antigen. The reaction involves production of IgE which is released from mast cells.



## [ Q: 845 ] MRCPass - Haematology

A 25 year old woman presents with diffuse lymphadenopathy, fever and malaise. Her blood film shows atypical lymphocytes and red cell agglutination.

*What is the most likely diagnosis?*

- 1- Legionella
- 2- Infectious mononucleosis
- 3- Meningococcal meningitis
- 4- Non-Hodgkin's lymphoma
- 5- Autoimmune haemolytic anaemia

## Answer &amp; Comments

**Answer:** 2- Infectious mononucleosis

Infectious mononucleosis is caused by Epstein Barr virus. It is one of the common causes of atypical lymphocytes, along with cytomegalovirus, HIV and Toxoplasma. The features of lymphadenopathy and atypical lymphocytes suggest infectious mononucleosis.



## [ Q: 846 ] MRCPass - Haematology

A 62 year old man who was asymptomatic, was referred for investigation of a high white cell count routinely found by the GP. On examination, he had palpable splenomegaly and looked pale.

Results reveal:

Haemoglobin 10.5 g/dl (11.5-16.5)

Platelet count  $175 \times 10^9$  /L (150-400)

White cell count  $32 \times 10^9$  /l (4-11)

Neutrophil count  $4 \times 10^9$  /L (1.5-7)

Lymphocyte count  $27 \times 10^9$  /L (1.5-4)

His Blood film shows many mature lymphocytes

*What is the best initial management?*

- 1- Prednisolone
- 2- Period of observation
- 3- Radiotherapy
- 4- Splenectomy
- 5- Chlorambucil

#### Answer & Comments

Answer: 2- Period of observation

In chronic lymphocytic leukaemia, Indications for therapy include fatigue, lymphadenopathy, anaemia or thrombocytopenia.

All of the others are treatment options which can be used.



#### [ Q: 847 ] MRCPass - Haematology

A 20 year old man presented with a cough and fevers. He was diagnosed as having a chest infection and was prescribed two different antibiotics. He felt worse two days later and mentioned that he had dark urine.

Investigations showed:

Hb 8.5 g/dl

MCV 75 fl

WCC  $12 \times 10^9$ /L

platelets  $155 \times 10^9$ /L

Blood film showed: anisopokilocytosis and bite cells

*What is the diagnosis?*

- 1- G6PD deficiency

2- Autoimmune haemolytic anemia

3- Aplastic anemia

4- Immune thrombocytopenic purpura

5- Acute myeloid leukaemia

#### Answer & Comments

Answer: 1- G6PD deficiency

There is evidence of haemolysis (bite cells are schistocytes), in this case most likely due to G6PD deficiency. Drugs normally causing haemolysis in G6PD deficiency are sulphur containing-dapsone, anti-malarials, bactrim/septrim, sulphonamides, primaquine.



#### [ Q: 848 ] MRCPass - Haematology

A 65 year old man has recently been diagnosed as having a deep vein thrombosis. He also has symptoms of headaches and lethargy. On examination he was flushed. Investigations reveal:

haemoglobin 19.5 g/dL

haematocrit 0.6 (0.4-0.52)

white cell count  $10.5 \times 10^9$  /L (4-11)

platelet count  $450 \times 10^9$  /L (150-400)

*Which one of following is the most appropriate investigation?*

- 1- Serum EPO level
- 2- Bone marrow aspirate
- 3- Neutrophil alkaline phosphatase
- 4- Red cell mass
- 5- Serum Vitamin B<sub>12</sub> levels

#### Answer & Comments

Answer: 4- Red cell mass

The most appropriate initial investigation will be red cell mass studies which would distinguish between true relative polycythaemia from secondary polycythaemia.

In Polycythaemia Rubra Vera, the serum EPO is low (an elevated EPO level suggests secondary polycythaemia).

Haematocrit is high as is the Hb concentration. Thrombocytosis and leukocytosis can occur. The NAP score and B12 levels are frequently increased.



[ Q: 849 ] MRCPass - Haematology

A 55 year old woman who had a cerebrovascular accident ten month ago, was referred for investigation of recurrent episodes of proximal deep venous thrombosis (DVT) of lower limbs in the last seven months.

Investigations show :

hemoglobin 7.9 g/dl

hematocrit 25%

mean corpuscular volume 99 fl

mean corpuscular hemoglobin 32 pg

white blood cells  $4 \times 10^9/L$

platelets  $93 \times 10^9/L$

reticulocytes 5.4%

lactate dehydrogenase 944 U/l

total bilirubin 50  $\mu\text{mol/L}$ .

A bone marrow biopsy showed a slight hyperplasia of erythrocytic bone marrow cell line.

Urine Dipstick - blood +++

*What is the likely diagnosis?*

- 1- Haemolytic uraemic syndrome
- 2- Antithrombin III deficiency
- 3- Paroxysmal nocturnal haemoglobinuria
- 4- Protein C deficiency
- 5- Protein S deficiency

Answer & Comments

Answer: 3- Paroxysmal nocturnal haemoglobinuria

Paroxysmal nocturnal haemoglobinuria (PNH) is an aplastic anaemia like syndrome which red cells are predisposed to complement lysis and resultant haemolytic anaemia. There is a pancytopenia as well as a tendency towards Budd Chiari thrombosis.

The diagnostic test is the HAM test. Serum (which contains complements) is acidified (activates the complement pathway) and mixed with red cells which undergo lysis. Haemosiderin is a by product of haem breakdown containing iron. Excess amounts leads to renal damage, and is also lost in the urine.

In PNH, there is a loss of anchor protein (GPI glycosylphosphatidyl inositol) which hold different antigens e.g. CD59, CD14. These are regulatory proteins for the complement pathway.



[ Q: 850 ] MRCPass - Haematology

A 17 year old patient has sickle cell disease. He presents unwell with abdominal pain. He also has right sided facial weakness. Investigations:

Hb 7.5 g/dl

platelets  $140 \times 10^9/L$

Urea 8 mmol/l

creatinine 100  $\mu\text{mol/l}$

sodium 141 mmol/l

potassium 3.8 mmol/l

bilirubin 45  $\mu\text{mol/l}$

AST 35 U/l

ALP 105 U/l

Alb 42 g/l

LDH 1250 U/l

Blood film shows sickle cells

*Which of the following is the most important management?*

- 1- Iv fluids

- 2- Iv antibiotics
- 3- Diamorphine injections
- 4- Blood transfusion
- 5- Exchange transfusion

#### Answer & Comments

**Answer:** 5- Exchange transfusion

When there is neurological damage or visceral sequestration crisis in sickle cell crisis, exchange transfusion is indicated. Exchange transfusion involves drawing out the patient's blood while exchanging it for donor red blood cells. It can be done manually or automatically with erythrocytapheresis. It prevents stroke and also may be used in patients with severe acute chest syndrome and to reduce the risk of iron overload in patients who require chronic transfusion therapy. Studies suggest that it may improve oxygenation and reduce hemoglobin S levels.



#### [ Q: 851 ] MRCPass - Haematology

A 35 year old man presents with pallor and breathlessness. Blood tests show anaemia with a Hb of 7.5 g/dl. A blood film shows Heinz bodies.

*Which one of the following diagnoses is most likely?*

- 1- Autoimmune haemolytic anaemia
- 2- Sideroblastic anaemia
- 3- G6PD deficiency
- 4- Post splenectomy
- 5- Sickle cell disease

#### Answer & Comments

**Answer:** 3- G6PD deficiency

Heinz bodies are precipitated, denatured Hb within red cells. They are present in G6PD deficiency. (Fava beans cause haemolysis in G6PD - 'Beans means Heinz' mnemonic).



#### [ Q: 852 ] MRCPass - Haematology

*Which one of these patient's results is most likely to have a diagnosis of chronic lymphatic leukaemia?*

- 1- A white cell count of  $35 \times 10^9/L$  and immature lymphocytes with prominent nucleoli in the peripheral blood
- 2- A white cell count of  $15 \times 10^9/L$  and mature lymphocytes with cleaved nuclei in the peripheral blood film
- 3- A white cell count of  $65 \times 10^9/L$  with neutrophils, myelocytes and promyelocytes on the blood film
- 4- A white cell count of  $25 \times 10^9/L$  and smear cells on the peripheral blood film
- 5- A white cell count of  $6 \times 10^9/L$ , and mature lymphocytes with polar villi on the blood film

#### Answer & Comments

**Answer:** 4- A white cell count of  $25 \times 10^9/L$  and smear cells on the peripheral blood film

Chronic lymphatic leukaemia is characterised by a lymphocytosis. The blood film shows mature lymphocytes with smear or smudge cells (they are squashed cells).



#### [ Q: 853 ] MRCPass - Haematology

A 65 year old woman has a diagnosis of chronic lymphocytic leukaemia (CLL). During one follow up appointment she mentions that she has got progressively more lethargic.

Her investigations show :

Hb 7.5 g/dl, MCV 118 fl, platelets  $180 \times 10^9/L$ , lymphocytes  $43 \times 10^9/L$ , reticulocyte count 10%.

*Which test is most likely to give the correct diagnosis?*

- 1- Folate level
- 2- Marrow trephine



- 3- Serum electrophoresis
- 4- Ferritin
- 5- Coomb's test

#### Answer & Comments

**Answer:** 5- Coomb's test

A raised reticulocyte count could have led to the high MCV. The clinical picture is one of haemolysis which is occasionally seen in CLL. The Coomb's test will help to confirm this.



#### [ Q: 854 ] MRCPass - Haematology

A 28 year old man with glucose-6-phosphate dehydrogenase deficiency presents with fatigue and jaundice. The features developed following a pneumonia a week ago.

*Which of the following is likely to be found?*

- 1- Low mean cell volume
- 2- Positive direct antiglobulin test
- 3- Spherocytes present on blood film
- 4- Haemoglobinuria
- 5- Reduced reticulocyte count

#### Answer & Comments

**Answer:** 4- Haemoglobinuria

The clinical scenario describes haemolytic anaemia. Haemoglobinuria is seen in haemolytic anaemia. Patient may present with fatigue and tiredness. Low mean cell volume would mean lack of reticulocytosis. This is unlikely, there is usually increased reticulocyte count in all haemolytic anaemias including G6PD deficiency. Spherocytes are seen in hereditary spherocytosis and the antiglobin test is positive in autoimmune haemolytic anaemia (not just G6PD deficiency).



#### [ Q: 855 ] MRCPass - Haematology

A 60 year old Afro-Caribbean man is referred with abdominal discomfort. On examination, he has massive splenomegaly. The FBC shows:

Hb 8.2 g/dl

WBC  $15 \times 10^9/L$

Platelets  $110 \times 10^9/L$

Blood smear : erythroblastic picture

*Which of the following diagnoses is the most likely?*

- 1- Myelofibrosis
- 2- Polycythaemia rubra vera
- 3- Non-Hodgkin's lymphoma (NHL)
- 4- Aplastic anaemia
- 5- Chronic myeloid leukaemia

#### Answer & Comments

**Answer:** 1- Myelofibrosis

Myelofibrosis exists likely to be the case described above. Median age at diagnosis is about 60 years, and median life expectancy from onset of symptoms is 10 years. In contrast, acute MF in adulthood is a rapidly fatal disorder in which splenomegaly is not usually observed; bone marrow examination typically reveals numerous bizarre megakaryocytes and blasts.



#### [ Q: 856 ] MRCPass - Haematology

A 32 year old woman presents to the casualty with worsening dyspnoea over 3 weeks. She has no history of jaundice of anaemia.

On examination, she had a blood pressure of 125/65 mmHg. Her conjunctivae were pale. Abdominal examination was unremarkable and there was no splenomegaly. Investigations show :

Hb 6.5 g/dl

WBC  $13.5 \times 10^9/L$

Plts  $255 \times 10^9/L$

MCV 105 fl

LDH 680 IU/dl

Direct Coomb's test positive

Film: Spherocytes ++, reticulocytes ++

*What should be the treatment for her condition?*

- 1- Iron replacement
- 2- Bone marrow examination
- 3- Vitamin K
- 4- Immunosuppressants
- 5- B12 and folate

#### Answer & Comments

Answer: 4- Immunosuppressants

This woman is most likely to have autoimmune haemolytic anaemia (anaemia, high LDH, spherocytes on the blood film), and positive Direct Coomb's test. Steroids, intravenous immunoglobulin may be used as first line treatment, and blood transfusion may be necessary. Autoimmune haemolytic anaemia can be due to immune disorders (SLE), toxic chemicals and drugs, (methyldopa, penicillin), antiviral agents (eg, ribavirin), physical damage, and infections (infectious mononucleosis).



[ Q: 857 ] MRCPass - Haematology

A 35 year old man presents with fevers and lymphadenopathy. A bone marrow biopsy was done and confirms Hodgkin's lymphoma.

*Which one of the following form has the best prognosis?*

- 1- Nodular sclerosing
- 2- Lymphocyte predominant
- 3- Lymphocyte depleted
- 4- Mixed cellularity
- 5- Promyelocytic

#### Answer & Comments

Answer: 2- Lymphocyte predominant

Hodgkin's lymphoma is rare in children. Nodular sclerosing is the commonest and lymphocyte depleted is the rarest form. The lymphocyte predominant form has the best prognosis, whilst the lymphocyte depleted form has the worst.



[ Q: 858 ] MRCPass - Haematology

A 30 year old man presents with malaise and is found to be anaemic clinically. His blood tests reveal :

Hb of 10.5 g/dl

WCC  $8 \times 10^9/L$

platelet count  $180 \times 10^9/dl$

reticulocyte count  $160 \times 10^9/L$  (50-100)

Bilirubin is 80 mmol/l

AST 30 U/l

ALP 110 U/l

LDH us 380 U/l (10-250)

Blood film shows spherocytosis

*Which of the following tests is most appropriate?*

- 1- Direct antiglobulin test
- 2- G6PD activity
- 3- Hb electrophoresis
- 4- Urinary haemosiderin
- 5- Methaemoglobin levels

#### Answer & Comments

Answer: 1- Direct antiglobulin test

The blood tests with high bilirubin, reticulocyte count and high LDH suggests haemolysis. Spherocytes on blood film suggests hereditary spherocytosis (HS). In HS the red cells are smaller, rounder, and more fragile than normal. The condition is commoner among Northern Europeans. The

direct antiglobulin test will help to confirm this.



[ Q: 859 ] MRCPass - Haematology

A 40 year old man has presented with seizures and has a confirmed cerebral infarct on head scan. He is commenced on phenytoin. 3 weeks later he presents with lethargy.

His bloods show Hb 8.0 g/dl, MCV 95 fl, WCC  $3.2 \times 10^9/L$ , platelets  $65 \times 10^9/L$ , Reticulocyte count 1%. Ham's test was negative. Bone marrow aspirate and trephine biopsy showed marked hypocellularity of the marrow with some lymphoid aggregates.

*What is the likely diagnosis?*

- 1- Folate deficiency
- 2- Myelofibrosis
- 3- Aplastic anaemia
- 4- Multiple myeloma
- 5- Bony metastasis

Answer & Comments

Answer: 3- Aplastic anaemia

The diagnosis is likely to be phenytoin related aplastic anaemia. MCV is normal and there is a low reticulocyte count as well as hypocellular bone marrow. Side effects of phenytoin are cerebellar syndrome, phenytoin encephalopathy, psychosis, locomotor dysfunction, hyperkinesia, megaloblastic anemia, decreased serum folate level, decreased bone mineral content, liver disease, IgA deficiency and gingival hyperplasia.



[ Q: 860 ] MRCPass - Haematology

A 70 year old woman was admitted to hospital with severe breathlessness. On examination her blood pressure was 100/55 mmHg and she had a raised JVP by 4 cm. Chest x ray showed mild pulmonary oedema.

Investigations revealed:

Haemoglobin 6.6 g/dL

MCV 108 fL

MCH 32.0 pg

White cell count  $3.0 \times 10^9/L$

Platelets  $75 \times 10^9/L$

Serum Vitamin B<sub>12</sub> normal

Folate 2 (3-20) ?g/l

*What should be done?*

- 1- Treat congestive cardiac failure then transfuse
- 2- Immediate blood transfusion
- 3- Serum electrophoresis
- 4- Iron replacement
- 5- B12 and folate replacement

Answer & Comments

Answer: 5- B12 and folate replacement

Blood transfusion may worsen cardiac failure in this case. In patients who are folate deficient erythropoiesis rapidly resolves when supplements are given, and transfusion is rarely needed in the elderly (unless the anaemia is very severe).



[ Q: 861 ] MRCPass - Haematology

A 35 year old man has recently been diagnosed with Hodgkin's lymphoma.

*In reviewing his symptoms, which one of the following indicates the poorest prognosis in Hodgkin's lymphoma?*

- 1- Mediastinal, inguinal lymphadenopathy and fever
- 2- Mediastinal lymphadenopathy and night sweats
- 3- Abdominal and inguinal lymphadenopathy, and night sweats
- 4- Cervical and mediastinal lymphadenopathy
- 5- Mediastinal and inguinal lymphadenopathy.

## Answer &amp; Comments

**Answer:** 1- Mediastinal, inguinal lymphadenopathy and fever

Stage III disease occurs when lymph nodes are present across both sides of diaphragm, hence worse prognosis than when lymph nodes are localised to the same side of the diaphragm. Presence of B symptoms - night sweats and fevers also worsen prognosis.



## [ Q: 862 ] MRCPass - Haematology

A 25 year old man was admitted with a 2 month history of rash, fatigue, intermittent hemoptysis, and purpura, culminating in a seizure. On examination, widespread petechiae and purpura with scleral icterus were noted.

There was no lymphadenopathy or splenomegaly.

Investigations show :

platelet count  $3 \times 10^9/L$

hemoglobin 5.5 g/dL

mean corpuscular volume 90 fL

white cell count  $19.6 \times 10^9/L$

urea 16 mmol/L

creatinine 270  $\mu\text{mol/L}$

lactate dehydrogenase 2200 U/L

total bilirubin 79  $\mu\text{mol/L}$

haptoglobin 6 g/L

Blood film shows anisocytosis, moderate to marked polychromasia, and slight to moderate poikilocytosis, predominantly schistocytes.

**What is the best treatment option?**

- 1- Haemodialysis
- 2- Azathioprine
- 3- Plasma exchange
- 4- Bone marrow transplant
- 5- Intravenous immunoglobulins

## Answer &amp; Comments

**Answer:** 3- Plasma exchange

Thrombotic thrombocytopenic purpura (TTP) is characterised by microangiopathic haemolysis and thrombocytopenia. There is a spectrum of presentations with TTP-HUS. Neurological features are present in 60% of patients of TTP and renal failure is often associated in HUS (haemolytic uraemic syndrome).



## [ Q: 863 ] MRCPass - Haematology

A 8 year old boy presents to his GP with lethargy and pallor.

His investigations show :

Hb 5.5 g/dl

WBC  $2.7 \times 10^9/L$

Plts  $42 \times 10^9/L$

Neutrophils  $0.9 \times 10^9/L$

**What is the next best investigation?**

- 1- Peripheral blood immunophenotyping
- 2- Bone marrow cytogenetics
- 3- Haematinics
- 4- Bone marrow aspirate and trephine
- 5- ANA and Rheumatoid factor

## Answer &amp; Comments

**Answer:** 4- Bone marrow aspirate and trephine

Pancytopenia may be due to bone marrow failure (aplastic anaemia) or to bone marrow infiltration (leukaemia, lymphoma or non-haemopoietic malignancy). Aplastic anaemia may be idiopathic or secondary to drugs, paroxysmal nocturnal haemoglobinuria or Fanconi's anaemia. In a child of this age, leukaemia (ALL, AML) or aplastic anaemia would be the most likely causes of pancytopenia.



## [ Q: 864 ] MRCPass - Haematology

A 38 year old woman presents to the haematologist for review as she has lethargy.

She is on iron tablets. Her blood results show:

Hb 9.5 g/dl

MCV 105 fl

WCC  $7 \times 10^9/L$

platelets  $218 \times 10^9/L$

Blood film shows anisopoikilocytosis and poikilocytosis

*What should be done next?*

- 1- Intramuscular iron therapy
- 2- Blood transfusion
- 3- Erythropoietin
- 4- Investigation for folate deficiency
- 5- No immediate action

## Answer &amp; Comments

Answer: 5- No immediate action

The blood film and poor response to iron therapy suggests sideroblastic anaemia.

Sideroblastic anaemia is managed by removing the precipitating factors e.g. alcohol or myelodysplasia.



## [ Q: 865 ] MRCPass - Haematology

A 23 year old man presents with jaundice during a planned holiday to Africa. He has been taking malarial prophylaxis.

He is afebrile and apart from lethargy, feels well. He reports passing dark urine for the past two days.

*What is the likely cause?*

- 1- Beta thalassemia
- 2- Haemolysis due to G6PD deficiency
- 3- Sickle cell crisis
- 4- Falciparum malaria

## 5- Hepatitis C infection

## Answer &amp; Comments

Answer: 2- Haemolysis due to G6PD deficiency

G6PD deficiency is common in the Mediterranean and African populations. Inheritance is X-linked. Intravascular haemolysis is usually precipitated by oxidative stress, such as infections and drugs. The most common drugs implicated are anti-malarials, dapsone and sulphonamides.



## [ Q: 866 ] MRCPass - Haematology

A 20 year old man complains of intermittent dark urine and abdominal pains. He is found to have a haemoglobin of 9.7 g/dl, but the rest of the full blood count is normal.

*What is the most likely diagnosis?*

- 1- Autoimmune haemolytic anaemia
- 2- G6PD deficiency
- 3- Paroxysmal nocturnal haemoglobinuria
- 4- Paroxysmal cold hemoglobinuria
- 5- Hereditary spherocytosis

## Answer &amp; Comments

Answer: 3- Paroxysmal nocturnal haemoglobinuria

Paroxysmal nocturnal haemoglobinuria is caused by a defect in the formation of a red cell surface protein anchor, called GP1. As a result of the lack of this surface protein anchor, the red blood cells are more sensitive to complement lysis. Patients have intravascular haemolysis, leading to haemoglobinuria, and increased risk of thrombosis, often occurring in the mesenteric vessels and the portal vein. Treatment is supportive or with bone marrow transplantation.



## [ Q: 867 ] MRCPass - Haematology

A 35 year old man has had a 4 day history of dark urine. He has recently been on an antibiotic for a presumed urinary tract infection.

His blood tests show:

Hb 5.0 g/dl                      MCV 103 fl  
MCHC 34 g/dl (32-35)    WCC  $8 \times 10^9/L$   
reticulocytes  $160 \times 10^9/L$  (50-100)  
platelets  $130 \times 10^9/L$   
PT 13s (11.5-15.5)            APTT 38 s (30-40)  
urea 6 mmol/l                  creatinine 90 mmol/l  
sodium 140 mmol/l           potassium 4 mmol/l  
bilirubin 48 (1-22) mmol/l  
AST 18 (1-31) U/l              ALP 150 (20-120) U/l  
albumin 32 g/l  
LDH 1550 U/l (10-250)

Blood film shows blister cells.

*What is the diagnosis?*

- 1- Autoimmune haemolytic anaemia
- 2- Hereditary spherocytosis
- 3- Paroxysmal nocturnal haemoglobinuria
- 4- G6PD deficiency
- 5- Porphyria

#### Answer & Comments

Answer: 4- G6PD deficiency

The patient's clinical and laboratory findings (eg, markedly decreased hemoglobin and hematocrit levels with a markedly increased serum LDH activity), are characteristic of acute oxidant damage to the red blood cells and hemolysis due to glucose-6-phosphate dehydrogenase (G6PD) deficiency.

The blood film in G6PD deficiency shows blister cells (membrane protrusion) (Heinz bodies may also be seen when there is no haemolysis). Treatment is with blood transfusion, or in severe cases, exchange transfusion.

Hemolytic crisis occurs only after exposure to certain offending agents, including drugs, infections, exposure to fava beans, and diabetic acidosis. Drugs associated with hemolysis in G6PD deficiency include antimalarials (Primaquine, pamaquine), sulphonamides (Sulphamethoxazole), nitrofurantoin, analgesics (acetaminophen, aspirin, phenacetin), isoniazid (INH), methylene blue, and nalidixic acid.



[ Q: 868 ] MRCPass - Haematology

A 32 year old Cypriot patient is being investigated for anaemia. He has a Hb of 7.5 g/dl and MCV is 70 fl. His brother and sisters are also anaemic.

*Which one of the following is most likely?*

- 1- Increased IgM band on serum electrophoresis
- 2- Red cells show marked hypochromia
- 3- Severe iron deficiency due to GI bleeding
- 4- Severe B12 deficiency due to pernicious anaemia
- 5- Severe folate deficiency due to celiac disease

#### Answer & Comments

Answer: 2- Red cells show marked hypochromia

This patient is likely to have thalassaemia (probably major). Hb electrophoresis may show increased HbA2 in thalassaemia minor. The severe imbalance of globin chain synthesis (alpha >> beta) results in ineffective erythropoiesis and severe microcytic hypochromic anemia, there may also be precipitates within damaged red cells.



[ Q: 869 ] MRCPass - Haematology

A 35 year old man has known type 1 Von Willebrand's disease.



*Prior to surgery, which is the best test to assess bleeding tendency?*

- 1- Prothrombin time
- 2- Factor VIII antigen
- 3- Factor VIII levels
- 4- Bleeding time
- 5- Thrombin time

#### Answer & Comments

**Answer:** 2- Factor VIII antigen

Bleeding time is usually prolonged, and does not provide quantification of bleeding tendency. Factor VIII antigen measures the presence of vWF and gives a good estimate of tendency to bleed.



[ Q: 870 ] MRCPass - Haematology

An 19 year old man presents to the A&E with a petechial rash and platelet count of  $5 \times 10^9/L$ . He is otherwise well. A diagnosis of idiopathic thrombocytopenic purpura is made.

*Which of the following statements is true?*

- 1- The patient should be given a platelet transfusion
- 2- The patient should be observed
- 3- The patient should be treated with Anti-D
- 4- The patient should be treated with intravenous immunoglobulin
- 5- The patient should be commenced on steroids

#### Answer & Comments

**Answer:** 5- The patient should be commenced on steroids

In younger patients with ITP, the disease usually remits spontaneously within several weeks and no treatment is usually required unless there is significant bleeding.

However, after adolescence, the disease tends to run a chronic relapsing course and therefore requires therapy.

First line therapy is oral steroids. Patients who are refractory to, or are intolerant of steroids may respond to intravenous immunoglobulins (IVIg) or anti-D.



[ Q: 871 ] MRCPass - Haematology

A 35 year old man has a faint maculopapular rash on his chest and a few shotty lymph nodes. His bloods show Hb 13.5 g/dl, WCC  $14.0 \times 10^9/L$ , plt  $300 \times 10^9/L$ . Blood film shows reactive lymphocytes.

*Which of the following diagnosis is likely?*

- 1- Tuberculosis
- 2- Non hodgkin's lymphoma
- 3- Hepatitis B
- 4- Infectious mononucleosis
- 5- Pneumonia

#### Answer & Comments

**Answer:** 4- Infectious mononucleosis

There are several reactive lymph nodes as well as reactive lymphocytes suggestive of Epstein Barr virus infection / infectious mononucleosis. Other causes of reactive lymphocytes are CMV infection, toxoplasmosis and HIV.



[ Q: 872 ] MRCPass - Haematology

A 65 year old woman has symptoms of easy bruising. She was referred by the GP for investigation. On examination, she had splenomegaly.

Results show :

Haemoglobin 6.5 g/dL (11.5-16.5)

White cell count  $17 \times 10^9 /l$  (4-11)

Platelet count  $32 \times 10^9 /l$  (150-400)

Blood film shows lymphocytosis, myeloblasts and promyelocytes.

*Which one of following investigations is of prognostic value in this situation?*

- 1- Blood film
- 2- Bone marrow aspirate
- 3- Cytogenetic karyotyping
- 4- Immunophenotyping
- 5- Serum electrophoresis

#### Answer & Comments

Answer: 3- Cytogenetic karyotyping

Cytogenetic monitoring of the clinical course of acute myeloid leukaemia (suggested by blasts) is often associated with a specific chromosomal change, ie, t(8;21) in M2. Establishment of the change at diagnosis allows recognition of the leukemic cells in the marrow when relapse or residual disease is to be evaluated. It also provides a prognostic determinant.



[ Q: 873 ] MRCPass - Haematology

A 52 year old female presents with acute chest pain and breathlessness. The chest pains were pleuritic and started to develop a week ago. Examination reveals prominent P2 and clear breath sounds. She had bilateral ankle oedema. A urine dipstick showed protein +++.

*Which is the most likely explanation for these findings?*

- 1- Factor V Leiden
- 2- Reduced antithrombin III activity
- 3- Reduced levels of Von Willebrand's factor
- 4- Reduced d dimer concentration
- 5- Reduced factor VIII

#### Answer & Comments

Answer: 2- Reduced antithrombin III activity

AT III deficiency is associated with venous thrombosis. In this case, the history is consistent with a clinical diagnosis of pulmonary emboli and renal vein thrombosis.



[ Q: 874 ] MRCPass - Haematology

A 35 year old man has had allogeneic bone marrow transplantation which is HLA matched. 2 weeks later he develops a diffuse rash all over his body, feels sick and vomits several times. His temperature is 38°C. Blood tests show :

Hb 11.0 g/dl

WCC  $3 \times 10^9/L$

Neutrophils  $1.5 \times 10^9/L$

platelets  $18 \times 10^9/L$

PT 18s (11.5-15.5)

urea  $7 \mu\text{mol/l}$

creatinine  $70 \mu\text{mol/l}$

sodium 135 mmol/l

potassium 4 mmol/l

bilirubin  $28 \mu\text{mol/l}$

AST 48 U/l

ALP 155 U/l

albumin 32 g/l

LDH 550 U/l

*Which of the following is most likely?*

- 1- Bone marrow failure
- 2- Parvovirus infection
- 3- Leukaemic spread
- 4- Aplastic anaemia
- 5- Graft versus host disease

#### Answer & Comments

Answer: 5- Graft versus host disease

The rash, systemic symptoms, deranged liver enzymes point towards GVHD. T cells from the donor are attacking the recipient. Treatment

is with immunosuppression: ciclosporin, methylprednisolone, methotrexate or antithymocyte globulin (ATG).



[ Q: 875 ] MRCPass - Haematology

A 25 year old woman presented unwell with diarrhoea occurring 5 times a day for 4 days. She had not passed urine for a day.

Investigations:

Haemoglobin 8.2 g/dL

White cell count  $14.2 \times 10^9 / L$

Neutrophils  $10.5 \times 10^9 / L$

Platelets  $32 \times 10^9 / L$

Fibrinogen 5 g/dL

Serum sodium 138 mmol/L

Serum potassium 6.3 mmol/L

Serum urea 38 mmol/L

Serum creatinine 450  $\mu\text{mol/L}$

Serum albumin 29 g/L

Dipstick urine Blood + Protein +

*What is the diagnosis?*

- 1- Idiopathic thrombocytopenic purpura
- 2- Myelodysplastic syndrome
- 3- Disseminated intravascular coagulation
- 4- Haemolytic uraemic syndrome
- 5- Aplastic anaemia

Answer & Comments

Answer: 4- Haemolytic uraemic syndrome

The most likely diagnosis is Haemolytic uraemic syndrome due to diarrhoea associated with E coli infection. A stool sample for culture and blood film are important investigations to be performed.



[ Q: 876 ] MRCPass - Haematology

A 60 year old man has a several

month history of lower back pain and weakness.

His blood tests show :

Hb 11.0 g/dl

MCV 95 fl

WCC  $2.5 \times 10^9 / L$

platelets  $130 \times 10^9 / L$

PT 13 s (11.5-15.5)

APTT 28s (30-40)

urea 26  $\mu\text{mol/l}$

creatinine 280  $\mu\text{mol/l}$

sodium 138 mmol/l

potassium 4 mmol/l

bilirubin 38  $\mu\text{mol/l}$

AST 26 U/l

ALP 150 U/l

albumin 33 g/l

total protein 95 g/l

*What is the most likely diagnosis?*

- 1- Multiple myeloma
- 2- Metastatic bladder carcinoma
- 3- Lymphoma
- 4- Paraganglioma
- 5- Chronic myeloid leukaemia

Answer & Comments

Answer: 1- Multiple myeloma

Multiple myeloma is most likely. There is raised protein (60-80 normal range) indicated probably paraproteinaemia. There is also low white cell count due to bone marrow infiltration, and renal failure. The symptoms of bone pain also suggests infiltration.



[ Q: 877 ] MRCPass - Haematology

A 20 year old girl is being

investigated for anaemia. Her father has previously had a splenectomy. Her blood film shows spherocytes and anaemia.

*In view of the likely diagnosis, which is the most useful investigation?*

- 1- Reticulocyte count
- 2- Mott cell
- 3- Haemosiderinuria
- 4- Haptoglobin
- 5- IgG and C3 complement

#### Answer & Comments

**Answer:** 5- IgG and C3 complement

This patient is likely to have hereditary spherocytosis in view of the family history and that the father has had splenectomy as treatment. However, raised reticulocyte count and decreased haptoglobins and increased haemosiderinuria will be all be present as a single test, unhelpful. The Direct Antiglobulin Test is used to detect IgG or C3 bound to the surface of the red cell. In this scenario, it is helpful to exclude autoimmune haemolytic anaemia, since spherocytes would also be present on the blood film in AIHA.



#### [ Q: 878 ] MRCPass - Haematology

A 34 year old lady has a past history of an episode of deep vein thrombosis and two miscarriages. She presents now with further episode of DVT. She had a thrombophilia screen and was found to have a positive anti cardiolipin antibody.

*What is the best treatment?*

- 1- Clopidogrel
- 2- Warfarin 3 months
- 3- Long term low molecular weight heparin
- 4- Aspirin and Warfarin
- 5- Lifelong warfarin

#### Answer & Comments

**Answer:** 5- Lifelong warfarin

This patient with recurrent DVTs has the presence of lupus anticoagulant. She requires lifelong warfarin treatment.



#### [ Q: 879 ] MRCPass - Haematology

A 40 year old male who has a rheumatoid arthritis is admitted with a urinary tract infection.

Results show :

haemoglobin 7.5 g/dL (11-16)

white cell count  $1.5 \times 10^9$  /L (4-11)

platelets  $70 \times 10^9$  /L (150-400)

*Which one of the following drugs is the most likely cause of pancytopenia?*

- 1- Azathioprine
- 2- Cyclophosphamide
- 3- Prednisolone
- 4- Cyclosporin
- 5- Chloroquine

#### Answer & Comments

**Answer:** 1- Azathioprine

Azathioprine is a thiopurine analogue drug which is metabolised in the liver to mercaptopurine. The main side effects are bone marrow suppression (may lead to a pancytopenia) and also drug induced hepatitis.



#### [ Q: 880 ] MRCPass - Haematology

A 50 year old man presents with multiple bruises in the arms after working in the garden.

Investigations showed: Hb 13.2 g/dL, WCC  $5 \times 10^9$ /L, platelet count  $5 \times 10^9$ /L.

A bone marrow examination showed normal numbers of megakaryocytes and a diagnosis

of idiopathic thrombocytopenic purpura was made.

*What is the most appropriate treatment?*

- 1- Tranexemic acid
- 2- Oral prednisolone
- 3- Blood transfusion
- 4- Platelet transfusions
- 5- Intravenous immunoglobulin

#### Answer & Comments

Answer: 2- Oral prednisolone

The most appropriate treatment for this patient who is symptomatic from ITP is oral prednisolone. If the bleeding becomes severe, then IV immunoglobulin should be considered in addition to the steroids.



[ Q: 881 ] MRCPass - Haematology

An 12 year old girl has recurrent epistaxis.

Her investigations show:

Hb 11 g/dl, Plts  $300 \times 10^9/L$ , PT 16 sec (13-16 sec), aPTT 95 sec (28-38 sec).

*Which of the following deficiencies is most likely?*

- 1- Factor V deficiency
- 2- Factor VII deficiency
- 3- Von Willebrand's factor
- 4- Anticardiolipin antibody
- 5- Factor X deficiency

#### Answer & Comments

Answer: 3- Von Willebrand's factor

von Willebrand's disease would be most likely due to the prolonged APTT, the rest of the factors (same ones as those which warfarin act on) prolong PT.



[ Q: 882 ] MRCPass - Haematology

A 70 year old man is on lifelong oral anticoagulation for recurrent DVT.

He presents with minor bleeding from his gums for 1 day.

His INR is 9.0.

All other investigations are normal and he is otherwise well.

*What is the most appropriate course of action?*

- 1- Stop warfarin, monitor INR and restart when INR <5.0
- 2- Stop warfarin and administer Vitamin K 2 mg
- 3- Stop warfarin and institute either LMW heparin
- 4- Stop warfarin and give FFP
- 5- Reduce dose of warfarin to 0.5 mg until INR normalises

#### Answer & Comments

Answer: 1- Stop warfarin, monitor INR and restart when INR <5.0

If there is only minor bleeding, then cessation of warfarin is all that is required. If there are other risk factors or if there is major bleeding then the use of vitamin K or fresh frozen plasma should be considered.



[ Q: 883 ] MRCPass - Haematology

A 65 year old lady has a diagnosis of Non Hodgkin's lymphoma and has recently commenced chemotherapy. She now complains of feeling breathless and unwell.

On examination, she is pale and slightly jaundiced. She has splenomegaly.

Investigations show :

Hb 3.5 g/dl

MCV 106 fl

WCC  $8 \times 10^9/L$

platelets  $250 \times 10^9/L$

Reticulocytes  $125 \times 10^9/L$  (N 20-90)

Her FBC pre-chemotherapy was normal.

*What is the most likely explanation for this?*

- 1- Paroxysmal cold haemoglobinuria
- 2- Bone marrow suppression
- 3- Megaloblastic anaemia
- 4- Autoimmune haemolysis
- 5- Paroxysmal nocturnal haemoglobinuria

#### Answer & Comments

Answer: 4- Autoimmune haemolysis

Anaemia, raised MCV and high reticulocyte count suggests haemolysis. This may occur secondary to NHL. In addition, there is a strong association with fludarabine.



[ Q: 884 ] MRCPass - Haematology

A patient has had a splenectomy because of hereditary spherocytosis.

*How long should penicillin prophylaxis be used?*

- 1- During acute infections
- 2- 1 year
- 3- 10 years
- 4- 15 years
- 5- Life long

#### Answer & Comments

Answer: 5- Life long

Following splenectomy, patients should receive lifelong penicillin prophylaxis. The major complication of splenectomy is overwhelming sepsis with encapsulated bacteria (eg, S pneumoniae, H influenzae, N meningitidis). The overall risk of sepsis in asplenic patients is approximately 2% but varies depending on the age and underlying diseases.



[ Q: 885 ] MRCPass - Haematology

A 13 year old child has had recurrent episodes of bone pain. He has been admitted to hospital several times due to severe pains in the last 5 years.

He has X rays which show necrosis of the hip.

*Which of the following diagnosis is likely?*

- 1- Multiple myeloma
- 2- Paget's disease
- 3- Osteopetrosis
- 4- Sickle cell disease
- 5- Thalassemia

#### Answer & Comments

Answer: 4- Sickle cell disease

Aseptic necrosis of the hip, cholecystitis, renal papillary necrosis and proliferative retinopathy are clinical features of sickle cell disease.



[ Q: 886 ] MRCPass - Haematology

A 20 year old woman with sickle cell anemia presents with acute shortness of breath. A chest x ray obtained with a portable unit initially showed no abnormalities except for bibasilar hazy opacities.

Five and a half hours after admission, her oxygen saturation decreased to 76 percent with a respiratory rate of 24 breaths per minute. A repeat chest radiograph revealed increased interstitial markings.

*How should she be treated?*

- 1- Antibiotics and fluids
- 2- Intubation and ventilation
- 3- Noninvasive ventilation and plasma exchange
- 4- Splenectomy
- 5- High flow oxygen



## Answer &amp; Comments

**Answer:** 3- Noninvasive ventilation and plasma exchange

This is a case of acute chest syndrome related to sickle cell anaemia. Non invasive ventilation (CPAP) and plasma exchange is the best option, often along with antibiotics because the chest syndrome can be precipitated by infection.



## [ Q: 887 ] MRCPass - Haematology

A 25 year old female has had her first DVT when she started taking the oral contraceptive pill.

She reveals that her mother has also had DVT before.

*Which of the following is she likely to have?*

- 1- Factor V leiden deficiency
- 2- Protein C deficiency
- 3- Protein S deficiency
- 4- Antithrombin III deficiency
- 5- Lupus anticoagulant

## Answer &amp; Comments

**Answer:** 1- Factor V leiden deficiency

Although they are all possibilities, the family history suggests factor V leiden or antithrombin III deficiency. A female who has DVT precipitated by the OCP suggests factor V leiden more so than antithrombin III (male would suggest this).



## [ Q: 888 ] MRCPass - Haematology

A 32 year old lady had a new born baby with marked jaundice.

Serum bilirubin was 359 mmol/L and haemoglobin low.

The mother has had one previous normal delivery.

Haemolytic disease of the new born was suspected.

*Which of these statements is likely?*

- 1- Father is O Rh -ve
- 2- Father is AB Rh +ve
- 3- Mother is AB Rh +ve
- 4- Father is AB Rh -ve
- 5- Mother is O Rh +ve

## Answer &amp; Comments

**Answer:** 2- Father is AB Rh +ve

To Answer this question, ABO group is less relevant and Rh status is relevant.

Rh grouping of foetus is decided by the Rh status of the father. The first child would have been Rh +ve and led to sensitisation (antibodies developed by the mother). The mother is Rh -ve and the father is Rh +ve (who could also be homozygous or heterozygous for Rh).



## [ Q: 889 ] MRCPass - Haematology

A 35 year old man complains of leg cramps and is given quinine for the first time by his GP. He then presents unwell and complains of dark urine. his Hb is 7.4 g/dl. Direct antiglobulin test (DAT) test is negative.

*Which of the following is likely?*

- 1- G6PD deficiency
- 2- Autoimmune haemolytic anaemia
- 3- Paroxysmal cold haemoglobinuria
- 4- Phosphokinase deficiency
- 5- Sickle cell disease

## Answer &amp; Comments

**Answer:** 1- G6PD deficiency

The direct antiglobulin test (Coomb's) is negative and suggests that this is not autoimmune since there is no antibody

opsonisation on red cells. Quinine can precipitate haemolysis in G6PD deficiency as can aspirin, sulphonamides, fava beans and antimalarial agents.



[ Q: 890 ] MRCPass - Haematology

A 40 year old lady with presents with chronic discomfort in left upper quadrant of the abdomen. Investigations show :

Hb 16.9 g/dl

MCh 55 (28-32) pg

MCV 69 fl

White cell count  $11 \times 10^9/L$

Platelets  $490 \times 10^9/L$

*What is the underlying cause ?*

- 1- Essential thrombocythaemia
- 2- Primary polycythaemia
- 3- Renal cell carcinoma
- 4- Myelodysplasia
- 5- Chronic myeloid leukaemia

Answer & Comments

Answer: 2- Primary polycythaemia

The raised Hb, white cell and platelet count are consistent with polycythaemia rubra vera. Splenomegaly is common, and occasionally splenic infarction as well which may lead to left upper quadrant pains. Essential thrombocythaemia is associated with anaemia.



[ Q: 891 ] MRCPass - Haematology

A 30 year old man presents with reddish urine and paleness. He mentions recently travelling to Asia and being on malarial prophylaxis. On physical examination he had an axillary temperature of  $36.5^{\circ}C$ , pulse of 120/min, respiratory rate of 28/min and blood pressure of 80/60 mmHg. Other physical findings were normal.

Laboratory investigations revealed hemoglobin of 4.5 gm/dL, and platelet count  $342 \times 10^9/L$ .

Peripheral smear showed anisocytosis(+), poikilocytosis(+), spherocytosis(-), heinz body (+), sickling(-) and reticulocyte count 6.2%.

Other results: aspartate aminotransferase 420 iu/L, alanine aminotransferase 104 iu/L, indirect bilirubin 5.2 mg/dL, lactate dehydrogenase 721 iu/L. Direct Coombs test was negative.

Urine analysis: red colored, protein (+), bilirubin (+++).

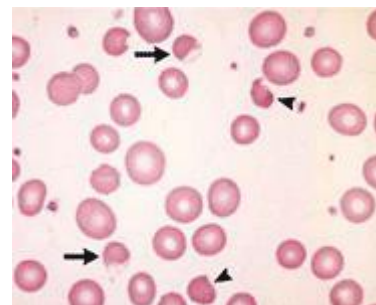
*What is the most likely diagnosis?*

- 1- Haemolytic uraemic syndrome
- 2- Sickle cell disease
- 3- Malaria
- 4- G6PD deficiency
- 5- Hereditary spherocytosis

Answer & Comments

Answer: 4- G6PD deficiency

Patients with G6PD deficiency are often asymptomatic. Chronic haemolysis does not occur, but haemolysis rather is precipitated by drugs such as chloroquine, primaquine, vitamin K, sulphonamides. G6PDH catalyzes the synthesis of NADPH from the hexose monophosphate pathway. Deficiency leads to oxidative damage and red cell haemolysis.



Acute hemolysis in G6PD deficiency, with two "blister cells" (arrows).



## [ Q: 892 ] MRCPass - Haematology

An 12 year old boy bleeds excessively after a laceration. Investigations show:

Hb 13.5 g/dl

WBC  $5.8 \times 10^9/L$

Plts  $270 \times 10^9/L$

PT 15 sec (13-16 sec)

APTT 85 sec (28-38 sec)

Factor VIII and Factor IX levels : normal

APTT 50:50 mix with normal plasma : 37 sec

*Which of the following is the most likely diagnosis?*

- 1- Haemophilia A
- 2- Factor XI deficiency
- 3- Factor X deficiency
- 4- Factor XII deficiency
- 5- Factor VII deficiency

## Answer &amp; Comments

Answer: 2- Factor XI deficiency

An isolated prolonged APTT will be caused by deficiencies in factors VIII, IX, XI and XII and by von Willebrand's disease. Factor XII deficiency is not associated with increased bleeding.

With normal Factor VIII and IX levels, this patient is most likely to have Factor XI deficiency. Factor XI deficiency is a mild bleeding disorder with autosomal co-dominant inheritance. Diagnosis is by specific Factor XI level estimation.



## [ Q: 893 ] MRCPass - Haematology

A 48 year old man has a diagnosis of acute myeloid leukaemia. He was given chemotherapy. A few weeks into induction chemotherapy, he develops jaundice and fevers.

Blood cultures did not grow any organisms. Despite intravenous antibiotics, the patient remained pyrexial.

*What is the likely cause?*

- 1- CMV
- 2- Candidiasis
- 3- Metastatic disease
- 4- Tuberculosis
- 5- Rubella

## Answer &amp; Comments

Answer: 1- CMV

The likely cause of persisting pyrexia plus hepatitis in this immunocompromised patient after treated with appropriate antibiotics would be a CMV infection. CMV infection can also cause a pneumonitis and colitis. Treatment with an antiviral agent such as ganciclovir could be considered.



## [ Q: 894 ] MRCPass - Haematology

A 60 year old woman presents with cervical lymphadenopathy and hepatosplenomegaly. Investigations reveal:

Hb 10.5 g/dl

WBC  $4.6 \times 10^9/L$

Plats  $125 \times 10^9/L$

serum electrophoresis : IgM paraprotein detected, IgA and IgG levels are normal

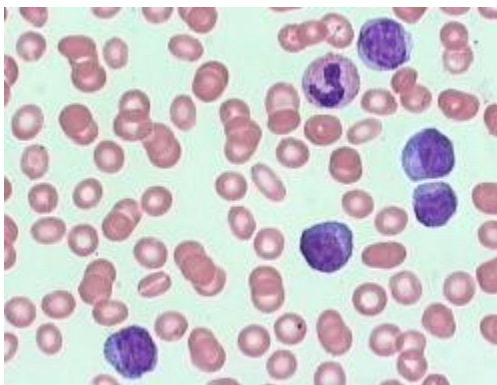
*The most likely diagnosis is:*

- 1- Monoclonal gammopathy of uncertain significance (MGUS)
- 2- Chronic lymphocytic leukaemia
- 3- Hodgkin's lymphoma
- 4- Waldenstrom's macroglobulinaemia
- 5- Multiple myeloma

## Answer &amp; Comments

**Answer:** 4- Waldenstrom's macroglobulinaemia

The fact that there is IgM paraprotein suggests Waldenstrom's macroglobulinaemia. Waldenstrom's macroglobulinemia is a lymphoplasmacytic lymphoma (invasion of bone marrow) that leads to secretion of IgM. Increased blood viscosity may result in thrombotic phenomenon, weakness, cryoglobulinemia, neurologic disorders, and fatigue.



Multiple plasmacytoid cells in Waldenstrom's macroglobulinaemia



## [ Q: 895 ] MRCPass - Haematology

history of night sweats. On examination, he had lymphadenopathy palpable in the cervical region and hepatosplenomegaly.

Investigations:

hemoglobin 8 g/dL

leukocyte count of  $6.6 \times 10^9/L$

A lymph node biopsy of right neck was performed. It showed effaced normal architecture and clusters and sheets of Reed-Sternberg cells

*What is the most likely diagnosis?*

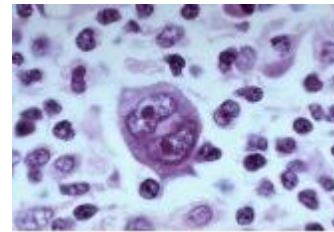
- 1- Essential thrombocythaemia
- 2- Acute myeloid leukaemia
- 3- Chronic myeloid leukaemia
- 4- Hodgkin's disease

5- Infectious mononucleosis

## Answer &amp; Comments

**Answer:** 4- Hodgkin's disease

Common presenting features for Hodgkin's disease are Pel Ebstein fever, weight loss, alcohol induced pain and lymphadenopathy. Cold agglutinins can occur, leading to possible haemolytic anaemia.



Reed-Sternberg cell in Hodgkin's disease with large, prominent nucleoli.



## [ Q: 896 ] MRCPass - Haematology

A 45 year old woman has a history of recurrent anaemia was noted have target cells and Howell Jolly bodies on a blood film examination. Investigations show :

Haemoglobin 7.8 g/dL

MCV 75 fl MCH 27 pg (28-32)

Serum B12 132 ug/L (160-760)

Red cell folate 90 ug/L (160-640)

Serum ferritin 9 ug/L (15-300)

*Which antibody is likely to be present?*

- 1- Anti mitochondrial antibody
- 2- Intrinsic factor antibody
- 3- Anti endomysial antibody
- 4- Anti thyroid antibody
- 5- Anti gastric parietal cell antibody

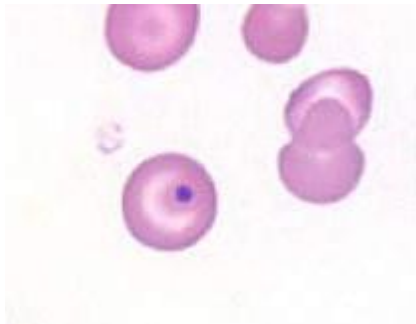
## Answer &amp; Comments

**Answer:** 3- Anti endomysial antibody

This patient has iron, folate and B12 deficiency. This is most likely due to coeliac disease.

FBC shows anaemia in 50% of coeliac disease patients; iron and folate deficiency are both common (microcytes and macrocytes), hypersegmented leucocytes and Howell-Jolly bodies (hyposplenism).

The preferred investigations are IgA Anti-tissue transglutaminase (tTG) or IgA Endomysial (EMA) antibodies. Antigliadin antibodies are less specific, they can be positive in Crohn's as well.



Howell-Jolly bodies are spherical blue-black inclusions within red blood cells (iron deficiency, thalassemia, post splenectomy)



[ Q: 897 ] MRCPass - Haematology

A 35 year old woman presents with jaundice and lethargy. Investigations reveal:

Haemoglobin 8.5 g/dL (11-16)

White cells  $7 \times 10^9/L$

Platelets  $190 \times 10^9/L$

reticulocyte count  $130 \times 10^9/L$  (25-85)

serum bilirubin 55  $\mu\text{mol/L}$  (1-20)

Blood film shows spherocytes

*Which of the following should be done?*

- 1- Direct antiglobulin test
- 2- Ultrasound of the abdomen
- 3- Bone marrow biopsy
- 4- Bone marrow aspirate
- 5- G6PD enzyme level

Answer & Comments

Answer: 1- Direct antiglobulin test

One of the first tests to consider in a patient with haemolytic anaemia is the direct antiglobulin test (Coomb's). This to exclude autoimmune haemolytic anaemia.



[ Q: 898 ] MRCPass - Haematology

A 42 year old woman has a history of positive lupus anticoagulant. She had a pulmonary embolus diagnosed 8 years ago, and two presentations which were consistent with deep vein thrombosis 6 and 12 months go.

*What is the best management?*

- 1- High dose aspirin
- 2- Lifelong warfarin
- 3- Antenatal advice
- 4- Avoidance of oral contraceptive pill
- 5- 6 months of warfarin then reassess

Answer & Comments

Answer: 2- Lifelong warfarin

More than one thrombotic event with the presence of lupus anticoagulant suggests that the patient requires lifelong warfarin.



[ Q: 899 ] MRCPass - Haematology

A 65 year old woman has a haemoglobin of 5.5 g/dl. She has lethargy but no other symptoms.

Her blood film shows oval macrocytes and hypersegmented neutrophils. She has a history of hypothyroidism and is on thyroid replacement. She also has vitiligo.

*What is the most likely diagnosis?*

- 1- Multiple myeloma
- 2- Myelodysplasia
- 3- Pernicious anaemia



4- Iron deficiency anaemia

5- Haemolytic anaemia

### Answer & Comments

Answer: 3- Pernicious anaemia

Pernicious anaemia (PA) is a disease of the stomach that is characterised by megaloblastic anaemia due to vitamin B<sub>12</sub> deficiency. It is secondary to intrinsic factor deficiency and gastric atrophy. It usually has an autoimmune basis. Pernicious Anaemia primarily affects the elderly - most patients are over 60 years of age. Women are affected more often than men, in a ratio of 3:2. It may be associated with autoimmune diseases, such as Addison's disease, hypothyroidism and also an increased risk of gastric carcinoma.



### [ Q: 900 ] MRCPass - Haematology

A 40 year old lady has been on warfarin for previous DVT. She is now breathless and a CTPA confirms pulmonary embolus despite her INRs being in therapeutic range of 2-3. She is also hyponatraemic with a sodium of 129 mmol/l.

With the short synacthen test, she has a low cortisol of 80nmol at 0 min going up to 200 nmol at 30 min.

*Which of the following diagnosis is likely?*

- 1- Autoimmune polyendocrine syndrome
- 2- Adrenal tumour
- 3- Protein C deficiency
- 4- Factor V leiden deficiency
- 5- Presence of lupus anticoagulant

### Answer & Comments

Answer: 5- Presence of lupus anticoagulant

Antiphospholipid syndrome is most likely due to the recurrent thrombotic tendency, lupus anticoagulant or anticardiolipin antibodies may be present. It has a propensity towards

adrenal vein thrombosis and can cause hypoadrenalism as in this case.



### [ Q: 901 ] MRCPass - Haematology

A 20 year old girl receives a blood transfusion. 5 minutes after the transfusion is commenced, she develops a tachycardia and abdominal pains.

*Which of the following is the correct management of an acute haemolytic transfusion reaction due to ABO blood group incompatibility?*

- 1- Stop transfusion and assess
- 2- Repeat cross match and re-transfuse
- 3- Intravenous dextrose
- 4- Hydrocortisone 100mg intravenously
- 5- Continue transfusion slowly

### Answer & Comments

Answer: 1- Stop transfusion and assess

The immediate treatment of an acute haemolytic transfusion reaction due to a major blood group incompatibility is to discontinue the blood transfusion immediately. This should be followed by assessment for possible shock and resuscitation with fluids e.g. colloids.



### [ Q: 902 ] MRCPass - Haematology

A 35 year old man has recently been commenced on low molecular weight heparin and then warfarin following a diagnosis of DVT.

*Which of the following is well known long term side effect of heparin?*

- 1- Polycythaemia
- 2- Visual loss
- 3- Renal impairment
- 4- Osteoporosis
- 5- Hirsutism



## Answer &amp; Comments

**Answer:** 4- Osteoporosis

Heparin induced thrombocytopenia, osteoporosis and thrombosis can occur. Warfarin can cause skin necrosis.



## [ Q: 903 ] MRCPass - Haematology

A patient who is known to have hereditary spherocytosis and has mild jaundice and gallstones is awaiting splenectomy.

*How long prior to splenectomy should pneumococcal vaccination be administered?*

- 1- 1 day
- 2- 5 days
- 3- 3 weeks
- 4- 3 months
- 5- 6 months

## Answer &amp; Comments

**Answer:** 3- 3 weeks

Pneumococcal immunisation should be administered to the patient 2-4 weeks before splenectomy.



## [ Q: 904 ] MRCPass - Haematology

A 28 year old woman has had a diagnosis of pulmonary embolus. She has the following investigations:

Haemoglobin 11.3 g/dl, white cell count  $4.0 \times 10^9/L$ , platelet count  $45 \times 10^9/L$ .

*Which of the following diagnoses is more likely?*

- 1- Homocystinuria
- 2- Protein C deficiency
- 3- Factor V leiden deficiency
- 4- Antiphospholipid syndrome
- 5- Protein S deficiency

## Answer &amp; Comments

**Answer:** 4- Antiphospholipid syndrome

Apart from a thrombotic tendency, antiphospholipid syndrome is associated with a low white cell count and thrombocytopenia.



## [ Q: 905 ] MRCPass - Haematology

A 28 year old lady is 30 weeks pregnant when she presents with a left sided DVT. She has had a previous miscarriage before. Her investigations show :

Hb 10.2 g/dl

MCV 68 fl

WBC  $8.0 \times 10^9/L$

Plts  $250 \times 10^9/L$

Direct Coomb's Test : positive

Reticulocyte count  $90 \times 10^9/L$  (25-125)

APTT 51 sec (normal 28-38 sec)

PT 16 sec (normal 13-16 sec)

Protein C activity 0.75 iu/ml (0.67-1.38)

Total protein S 100% (64-154)

*Which of the following diagnosis is likely?*

- 1- Heparin induced thrombocytopenia
- 2- Protein C deficiency
- 3- Protein S deficiency
- 4- Factor V leiden
- 5- Antiphospholipid syndrome

## Answer &amp; Comments

**Answer:** 5- Antiphospholipid syndrome

Of the following choices, antiphospholipid syndrome is most likely because of the recurrent thrombotic tendency. Raised APTT and positive Direct Coomb's test (measures presence of antibodies on red cells) can be caused by lupus anticoagulant.



## [ Q: 906 ] MRCPass - Haematology

A 32 year old woman presents with bleeding gums and easy bruising. Her medications are lansoprazole and cispriide for reflux oesophagitis.

Investigations show :

Haemoglobin 12.5 g/dL (13.0-16.5)

MCV 90 fl (83-95)

Platelets  $35 \times 10^9/L$  (150-400)

Blood film : occasional giant platelets

Prothrombin time 12 s (11.5-15.5)

*What is the likely diagnosis?*

- 1- Disseminated intravascular coagulation
- 2- Immune thrombocytopenia
- 3- Thrombotic thrombocytopenic purpura
- 4- Megakaryocytic thrombocytopenia
- 5- Drug-induced thrombocytopenia

#### Answer & Comments

Answer: 2- Immune thrombocytopenia

This is a case of immune thrombocytopenia in which low platelets with other counts being normal apart from slight anaemia (due to bleeding).



[ Q: 907 ] MRCPass - Haematology

A child has severe anaemia and been diagnosed as having thalassemia major.

*Which of the following is the major form of haemoglobin present when the condition exists?*

- 1- Haemoglobin A2
- 2- Haemoglobin C
- 3- Haemoglobin F
- 4- Haemoglobin H
- 5- Haemoglobin A

#### Answer & Comments

Answer: 3- Haemoglobin F

In Beta-thalassaemia major there is a complete defect in production of beta globin chains, which leads to impaired formation of HbA (which is made up of 2 alpha and 2 beta chains). Haemoglobin F is the major haemoglobin as this haemoglobin is made up of alpha and gamma chains.

Patients with thalassemia major require lifelong blood transfusions (hypertransfusions) with iron chelation therapy (desferrioxamine).



[ Q: 908 ] MRCPass - Haematology

A 20-year-old man was referred for investigation of lifelong hemolytic anemia. Jaundice accompanied by anemia and splenomegaly had been apparent since early life. Episodes of jaundice were more marked during infections or after fasting and less pronounced following exposure to sunlight, was conspicuous.

On investigation the following results were obtained:

hemoglobin, 11.8 g/dL

mean corpuscular volume [MCV] 85.5 fL

mean corpuscular hemoglobin [MCH] 29.1 pg

mean corpuscular hemoglobin concentration [MCHC] 34 g/dL

reticulocyte count 5.44

Blood film shows spherical red cells with lack of pallor in the central area.

*What is the diagnosis?*

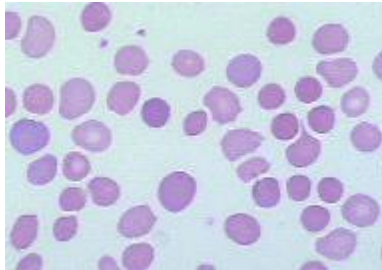
- 1- Anaemia of chronic disease
- 2- Sideroblastic anaemia
- 3- Megaloblastic anaemia
- 4- Hereditary spherocytosis
- 5- Iron deficiency anaemia

#### Answer & Comments

Answer: 4- Hereditary spherocytosis

Hereditary spherocytosis gene for ankyrin (cell membrane protein) has been mapped to chromosome 8 and is autosomal dominant. It presents in childhood with jaundice and splenomegaly.

Treatment is with splenectomy.



Red cells are more spherical in hereditary spherocytosis and lack the central area of pallor.



[ Q: 909 ] MRCPass - Haematology

A 60 year old man has been on warfarin for a DVT. He had an INR of 9 during a follow up appointment when he was noticed to have haematuria and epistaxis.

*What is the appropriate management?*

- 1- 2 units blood transfusion
- 2- 2 units of platelets
- 3- Fresh frozen plasma 1 unit
- 4- Stop warfarin and observe
- 5- 0.5 mg of vitamin K iv

Answer & Comments

Answer: 5- 0.5 mg of vitamin K iv

The patient has minor bleeding. According to The British Society of Haematology guidelines, when INR is > 8 with minor bleeding, warfarin should be discontinued until the INR is < 5. IV vitamin K 0.5 mg or oral vitamin K 5 mg should then be given.



[ Q: 910 ] MRCPass - Haematology

A 55 year old man has had varicose vein repair. He develops a swollen leg five

days following surgery and an ultrasound of the leg confirms a DVT. This is despite him having prophylactic low molecular weight heparin.

His Hb is 11g/dl, WCC  $13 \times 10^9/L$ , platelet count is  $45 \times 10^9/L$ .

*Which of the following could have caused the DVT?*

- 1- Behcet's disease
- 2- Factor V leiden deficiency
- 3- Protein C deficiency
- 4- Immune thrombocytopenic purpura
- 5- Heparin induced thrombocytopenia

Answer & Comments

Answer: 5- Heparin induced thrombocytopenia

Type I heparin induced thrombocytopenia (HIT) occurs within a few days of heparin and is usually mild.

In this case, type II HIT is more likely, and this occurs slightly later (5-15 days). It is associated with thrombosis and a low platelet count. Alternative anticoagulation should be used (hirudin, danaparoid sodium).



[ Q: 911 ] MRCPass - Haematology

A 55 year old man has G6PD deficiency. He presents with a haemolytic crisis after a drug was started.

*Which one of the following is probable?*

- 1- Carbamazepine
- 2- Gentamicin
- 3- Paracetamol
- 4- Chloramphenicol
- 5- Phenytoin

Answer & Comments

Answer: 4- Chloramphenicol

Haemolysis in G6PD deficiency is due to oxidative damage (decreased generation of NADPH due to enzyme deficiency).

The common categories of drugs are:

Sulphonamides

Antimalarials

Antipyretics (aspirin + paracetamol)

Others : Chloramphenicol, nitrofurantoin, Dapsone, Probenecid, Vit K



[ Q: 912 ] MRCPass - Haematology

A 32 year old woman who is 20 weeks pregnant presented with lethargy, confusion and drowsiness.

On examination she has bilateral leg weakness and a purpuric rash was noticed on both legs.

Investigations showed:

Hb 8.2 g/dl

WCC  $7.2 \times 10^9/L$

platelets  $25 \times 10^9/L$

reticulocytes 3%

Urea 28 mmol/l

Creatinine 360  $\mu\text{mol/l}$

Blood film showed: fragmented cells and polychromasia

*What treatment should be administered?*

- 1- Dexamethasone
- 2- Plasma exchange
- 3- Platelet transfusion
- 4- Cyclophosphamide
- 5- Blood transfusion

Answer & Comments

Answer: 2- Plasma exchange

This patient has thrombotic thrombocytopenic purpura as suggested by haemolysis on the blood film, anaemia, thrombocytopenia, renal

failure and also neurological features. Treatment of choice is plasma exchange with fresh frozen plasma infusion. High dose steroids may also be beneficial. Plasma exchange removes antibodies which is the main pathogenic problem in the disease.



[ Q: 913 ] MRCPass - Haematology

A 23 year old woman presented very unwell with a miscarriage. On examination, she was very pale and breathless. She had a blood pressure of 90/60 mmHg.

Investigations revealed:

Haemoglobin 9 g/dL

Platelets  $52 \times 10^9/L$

Prothrombin time 20 sec (11-15)

APTT 55 sec (30-40)

Fibrinogen 0.3 g/L (-4)

Blood film : Fragmented cells

*What should be administered?*

- 1- Intravenous hydrocortisone
- 2- Vitamin C
- 3- Tranexemic acid
- 4- DDAVP
- 5- Cryoprecipitate

Answer & Comments

Answer: 5- Cryoprecipitate

This is a case of disseminated intravascular coagulation (DIC) in which fibrinolytic system becomes activated, leading to thrombin formation. Unregulated fibrinolysis and systemic fibrinogenolysis occurs with release of plasmin into the circulation.

Typically, the blood film shows fragmented red blood cells. Treatment aims to correct the coagulopathy with blood products e.g. cryoprecipitate to replace fibrinogen, or fresh frozen plasma. Vitamin K can also be given in event of significant bleeding.



## [ Q: 914 ] MRCPass - Haematology

A 55 year old patient is known to have alcoholic liver disease. He drinks 15 pints of beer a day and has oesophageal varices when he had endoscopy 3 months ago. He now has melaena with the following blood results :

Hb 7.5 g/dl

MCV 103 fl

WCC  $11 \times 10^9/L$

platelets  $100 \times 10^9/L$

PT 20 s (11.5-15.5)

APTT 40s (30-40)

Fibrinogen 0.8.0g/L (1.8-5.4)

urea 17  $\mu\text{mol/l}$

creatinine 105  $\mu\text{mol/l}$

sodium 130 mmol/l

potassium 4 mmol/l

bilirubin 62  $\mu\text{mol/l}$

AST 328 U/l

ALP 200 U/l

albumin 32 g/l

*Apart from blood transfusion, which of the following would be useful?*

- 1- Factor VIII
- 2- Cryoprecipitate
- 3- Exchange transfusion
- 4- Haemodialysis
- 5- Albumin

## Answer &amp; Comments

**Answer:** 2- Cryoprecipitate

With alcoholic liver disease, there is a prolonged PT and low platelet count. However, in severe alcoholic liver disease fibrinogen can also be low as in this case, thus cryoprecipitate would be useful.



## [ Q: 915 ] MRCPass - Haematology

A 50 year old man presents with hypertension. Further blood tests reveal the following: Hb 18.6g/dl, WCC  $16 \times 10^9/L$ , plt  $600 \times 10^9/L$ . The erythropoietin level is normal.

*What is the most likely diagnosis?*

- 1- Secondary polycythaemia
- 2- Polycythaemia rubra vera
- 3- Myelofibrosis
- 4- Gaucher's disease
- 5- Recombinant EPO use

## Answer &amp; Comments

**Answer:** 2- Polycythaemia rubra vera

In polycythaemia rubra vera, the Hb, WCC and platelet counts are high along with a normal EPO level. EPO is raised in secondary polycythaemia (e.g. hypoxia).



## [ Q: 916 ] MRCPass - Haematology

An 80 year old lady complains of mild breathlessness and lethargy. She mentions that she is a vegetarian. There is no history of haematemesis or melaena. She has a past medical history of congestive cardiac failure.

On examination, she is pale, and has vitiligo on her hands. She has a JVP of +4 cm and fine inspiratory crepitations.

Her investigations show :

Hb 4.5 g/dl

MCV 105

WBC  $3.3 \times 10^9/L$

Plts  $120 \times 10^9/L$

*What is the most important initial management?*

- 1- Blood transfusion
- 2- Start vit B12 and folic acid
- 3- Red cell mass studies
- 4- Bone marrow aspirate

## 5- Schilling test

## Answer &amp; Comments

Answer: 2- Start vit B12 and folic acid

Pancytopenia and raised MCV suggests severe B12 or folate deficiency. Vitiligo is also a clue as to autoimmune phenomenon, and pernicious anaemia may be associated. In this lady, blood transfusion may exacerbate cardiac failure, and she is not actively bleeding, hence replacement of B12 and folate is a better option (symptoms will improve within 1-2 weeks).

B12 deficiency can occur as a result of pernicious anaemia (intrinsic factor deficiency), dietary e.g. vegetarian, Crohns disease, Serum folate level less than 5 ng/ml or serum vitamin B<sub>12</sub> level less than 100 pg/ml is diagnostic.

Folate deficiency is treated by giving folic acid orally at 1 to 5 mg daily. B12 deficiency is usually treated by parenteral administration of B12. The treatment schedule consists of giving 1000µg cobalamin intramuscularly daily for 10 - 14 days followed by 1000 µg once a week till hematocrit becomes normal followed by 1000 µg once a month for life in patients with pernicious anemia or those with malabsorption. Therapeutic doses of folate will correct the hematologic abnormalities due to cobalamin deficiency also but the neurologic abnormalities can worsen, it is best to give B12 first or both B12 and folate but never folate alone.



## [ Q: 917 ] MRCPass - Haematology

A 50 year old woman presented with a five year history of pain in the middle of both feet. She also had a history of back pain, pain in both sides of her hip, and pain in both metacarpals.

She had a serum ferritin concentration of 1087 µg/l, with normal results in liver function tests and a normal glucose concentration, full

blood count, and erythrocyte sedimentation rate.

*What is the diagnosis?*

- 1- Wilson's disease
- 2- Ochronosis
- 3- Marble bone disease
- 4- Haemochromatosis
- 5- Thalassemia

## Answer &amp; Comments

Answer: 4- Haemochromatosis

Haemochromatosis has an autosomal recessive pattern of inheritance and affects 1 in 250 of the northern European population, with up to 10% of people carrying the gene. Inheritance of the disease has long been associated with the tissue type HLA A3. A specific mutation of the gene, C282Y is common.

The clinical presentation of haemochromatosis is variable and not confined to the classic triad of cirrhosis, diabetes, and skin pigmentation. In this case the presentation is with arthropathy.



## [ Q: 918 ] MRCPass - Haematology

A 56 year old man was diagnosed with myelofibrosis.

*Which of the following is the most common presentation of the disease?*

- 1- Bleeding
- 2- Respiratory pain
- 3- Hyperuricaemia
- 4- Fatigue
- 5- Bone pain

## Answer &amp; Comments

Answer: 4- Fatigue

Clinical features of myelofibrosis include:



usually develops in adults over age 50 patients commonly present with fatigue and weakness spleen is often massively enlarged hepatomegaly occurs in over half of cases



[ Q: 919 ] MRCPass - Haematology

A 60 year old woman was admitted with a 10-month history of rash, fatigue, intermittent hemoptysis, and purpura. On admission, widespread petechiae and purpura with scleral icterus were noted. No lymphadenopathy or splenomegaly was present.

Investigations showed:

platelet count of  $3 \times 10^9/L$

hemoglobin level 5.5 g/dL

mean corpuscular volume 103 fL

white cell count  $3.6 \times 10^9/L$

neutrophils at 0.67 without myeloid blasts

reticulocyte count was 0.20

serum urea 15.4 mmol/L (43 mg/dL)

creatinine, 239  $\mu\text{mol/L}$

lactate dehydrogenase (LDH) 2505 U/L

total bilirubin 19  $\mu\text{mol/L}$  (4.6 mg/dL)

haptoglobin, 6 g/L

Review of the peripheral smear revealed notable red cell morphology and 24 nucleated red blood cells per 100 white blood cells, many of which were dysplastic.

*What is the most likely diagnosis?*

- 1- Idiopathic thrombocytopenic purpura
- 2- Thalassemia
- 3- Sickle cell disease
- 4- Myelodysplasia
- 5- Chronic myeloid leukaemia

Answer & Comments

Answer: 4- Myelodysplasia

~There is a gradual history of progression and the patient has a pancytopenia, she is also in the right age group for myelodysplasia. Myelodysplasia can be classified into five subtypes -

Refractory anaemia

Refractory anaemia with ring sideroblasts

Refractory anaemia with excess blasts

Refractory anaemia with excess blasts in transformation (near AML)

CML.

Few patients require aggressive therapy such as chemotherapy, it is reserved for younger patients to prevent progression to AML. Supportive therapy includes blood transfusions, platelet transfusions or G-CSF to improve blood counts. However median survival is only 2 years.



[ Q: 920 ] MRCPass - Haematology

An 18 year old girl presents with epistaxis. She is found to have a prolonged APTT. Her Mother has had previous bleeding episodes with similar coagulation test results.

*What is the most likely diagnosis?*

- 1- Factor VII deficiency
- 2- Factor V deficiency
- 3- Protein C deficiency
- 4- Von Willebrand's disease
- 5- Haemophilia B

Answer & Comments

Answer: 4- Von Willebrand's disease

The APTT is a general clotting screen which detects defects in the intrinsic clotting pathway (factors XII, XI, IX, and VIII, to which Von Willebrand factor is linked). Von Willebrand's disease is a predominantly autosomal dominant condition which is

associated with a bleeding tendency, which is usually mild and with a prolonged APTT.

The tests to diagnose vWD include:

bleeding time (prolonged)

factor VIII level test (measures the level of factor VIII and its ability to function)

von Willebrand factor antigen test (the disorder is considered mild if a person has 20% to 40% of the normal amount, severe if the amount is less than 10% of normal)

ristocetin cofactor activity test (measures how well the von Willebrand factor is working)



[ Q: 921 ] MRCPass - Haematology

A patient presents with acute promyelocytic leukaemia.

*What is the likely mechanism underlying leukaemogenesis?*

- 1- Aberrant fusion of 2 genes
- 2- Posttranslational modification
- 3- Over expression of cellular oncogene
- 4- Impaired degradation of protein
- 5- Short telomere

#### Answer & Comments

Answer: 1- Aberrant fusion of 2 genes

Acute promyelocytic leukaemia is frequently due to chromosomal translocation t (15; 17).



[ Q: 922 ] MRCPass - Haematology

A 15 year old male comes to the hematology clinic for his specialty care for von Willebrand Disease. The past medical history reveals that he was diagnosed with Type 1 von Willebrand Disease as a toddler after abnormal bruising and prolonged bleeding was noted by his family.

*What treatment is recommended if he were to have a significant episode of bleeding?*

- 1- Fresh frozen plasma
- 2- Factor X
- 3- Factor IX
- 4- Aspirin
- 5- DDAVP

#### Answer & Comments

Answer: 5- DDAVP

Treatment may include Desmopressin (DDAVP), Factor VIII and tranexemic acid in von Willebrand's disease.



[ Q: 923 ] MRCPass - Haematology

A 15 year-old boy presented to clinic with a 6 month history of anorexia and malaise. On examination, he had palpable inguinal lymphadenopathy and splenomegaly.

Investigations show : Hb 13.1 g/dl

White cell count  $20 \times 10^9/L$

erythrocyte sedimentation rate 15 mm/h

Peripheral blood film showed: atypical lymphocytes, blast cells and neutropenia

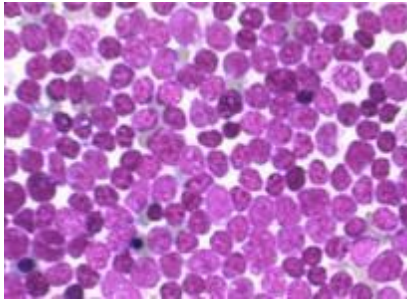
*What is the most likely diagnosis?*

- 1- Aplastic anaemia
- 2- Acute myeloid leukaemia
- 3- Chronic myeloid leukaemia
- 4- Paroxysmal nocturnal haemoglobinuria
- 5- Acute lymphoblastic leukaemia

#### Answer & Comments

Answer: 5- Acute lymphoblastic leukaemia

Blast cells on the blood film and a lymphocytosis would suggest acute lymphoblastic leukaemia. The malignant cells are immature lymphoid blast cells. The patient with acute lymphoblastic leukaemia is usually a child.



Bone Marrow biopsy showing predominant lymphoblasts



[ Q: 924 ] MRCPass - Haematology

A 25 year old woman has the following investigations at the antenatal clinic:

Hb 10.3 g/dl

WBC  $5.6 \times 10^9/L$

Plts  $290 \times 10^9/L$

MCV 69 fl

MCH 17.2

Iron 20 (14-29)  $\mu\text{mol/l}$

Ferritin 150 (15-200)  $\mu\text{mol/l}$

*What is the most useful investigation?*

- 1- Myeloma screen
- 2- Haemoglobin electrophoresis
- 3- Folate levels
- 4- HbF level
- 5- HbA2 level

Answer & Comments

Answer: 5- HbA2 level

Iron deficiency anaemia and thalassaemia trait are the most likely diagnoses of microcytic anaemia. Iron deficiency is unlikely in this case in view of the iron studies being normal. Beta thalassaemia trait is diagnosed by the presence of a raised HbA2. If both conditions are excluded, then alpha thalassaemia is the most likely diagnosis.



[ Q: 925 ] MRCPass - Haematology

A 30 year old lady with von Willebrand's disease is due to have plastic surgery to her face and seeks advice from the haematologist. She mentions that she has a history of epistaxis and bleeding gums.

*Which of the following is the most useful assessment of her coagulation status?*

- 1- Prothrombin time
- 2- Activated partial thromboplastin time
- 3- Thrombin time
- 4- Bleeding time
- 5- Factor VIII activity assay

Answer & Comments

Answer: 5- Factor VIII activity assay

Although bleeding time is prolonged in von Willebrand's disease, the factor VIII activity assay will give a measurement of the severity of her disease. The other useful tests would be the ristocetin cofactor assay and vWF antigen assays for von Willebrand's disease.



[ Q: 926 ] MRCPass - Haematology

A 20 year old patient has been found to have a mediastinal mass on the chest X ray during investigation for a pneumonia.

He has a Hb of 12 g/dl, WCC  $180 \times 10^9/L$ , platelets  $45 \times 10^9/L$ .

Blood film shows blast cells with have prominent nucleoli.

There is little cytoplasm within the white cells, and the nucleoli are convoluted.

*Which is the likely diagnosis?*

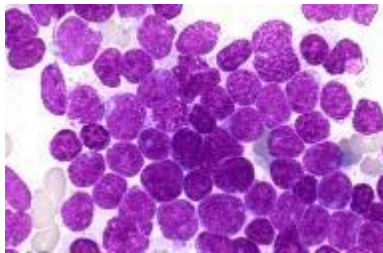
- 1- Acute myeloid leukaemia
- 2- Acute lymphoblastic leukaemia
- 3- Multiple myeloma
- 4- Hodgkin's lymphoma

## 5- Non Hodgkin's lymphoma

## Answer &amp; Comments

Answer: 2- Acute lymphoblastic leukaemia

There is a very high white cell count which should make leukaemia suspicious. ALL occurs in childhood and young adulthood. The blood film described above distinguishes ALL from AML (contains elongated inclusions called Auer rods).



Multiple lymphoblasts in ALL



## [ Q: 927 ] MRCPass - Haematology

A 25 year old lady who was pregnant was treated for a deep vein thrombosis with intravenous heparin. A recent test shows:

Haemoglobin 10.2 g/dL

White Cell Count  $8 \times 10^9/L$

Platelets  $32 \times 10^9/L$

*What is the best course of action this woman?*

- 1- Change to clexane
- 2- Commence warfarin
- 3- Change to aspirin
- 4- Change to danaparinoid
- 5- Continue iv heparin

## Answer &amp; Comments

Answer: 4- Change to danaparinoid

This patient has Heparin Induced Thrombocytopenia. When HIT is suspected, heparin treatment should be converted to danaparoid, which is a low molecular weight

heparinoid. It is usually given as an intravenous infusion



## [ Q: 928 ] MRCPass - Haematology

A 65 year old man complains of breathlessness and tiredness. He has confirmed pulmonary emboli. His Hb is 18 g/dL, WCC is  $15 \times 10^9/L$  and platelet count is  $700 \times 10^9/L$ .

*Which of the following can be helpful in confirming the diagnosis?*

- 1- Blood film
- 2- Bone marrow biopsy
- 3- Red cell mass
- 4- NAP score
- 5- Kleihauer test

## Answer &amp; Comments

Answer: 3- Red cell mass

The diagnosis is polycythaemia rubra vera and this can be confirmed by a raised red cell mass. NAP score is decreased in CML. A Kleihauer test is used to confirm transplacental blood loss from fetus to mother.



## [ Q: 929 ] MRCPass - Haematology

A 50 year old man with non Hodgkin's lymphoma is on Rituximab.

*Which of the following antigens does Rituximab have an action on?*

- 1- CD8
- 2- CD8
- 3- CD19
- 4- CD20
- 5- CD154

## Answer &amp; Comments

Answer: 4- CD20

Rituximab is an antibody to CD20 expressed on B cells and is used in B cell lymphomas (to try to cause cell lysis). The receptor is present in more than 90% of B-cell non-Hodgkin's lymphomas. Molecules that attach to CD20 can affect the growth and development of the tumor cells. Rituximab is an antibody that was developed using cloning and recombinant DNA technology from human and murine genes.



[ Q: 930 ] MRCPass - Haematology

A 32 year old who is known to have ITP presents with bleeding of her gums. Her platelet count normally runs at  $87 \times 10^9/L$  but now has dropped to  $42 \times 10^9/L$ .

*What is the best management plan?*

- 1- Observation
- 2- Steroids
- 3- Platelet transfusion
- 4- FFP
- 5- Whole blood transfusion

Answer & Comments

Answer: 2- Steroids

Chronic ITP rarely resolves spontaneously. First line treatment is with prednisolone. Patients with chronic ITP who require surgery may be given intravenous immunoglobulins which produce a transient rise in platelet count by blocking Fc receptors on splenic macrophages.

Platelet transfusion should be given only in life-threatening haemorrhage to enhance haemostasis.



[ Q: 931 ] MRCPass - Haematology

A 45 year old woman presents with an upper GI bleed and requires a blood transfusion.

Halfway through the first unit of blood, she experiences generalised discomfort.

*What is the most appropriate course of action?*

- 1- Chest X ray and abdominal x ray
- 2- Blood cultures
- 3- Give analgesia and continue
- 4- IV steroids
- 5- Stop the blood transfusion and give IV fluids

Answer & Comments

Answer: 5- Stop the blood transfusion and give IV fluids

Acute transfusion reactions can cause generalized discomfort, loin pain and pain at the cannula site may all precede haemoglobinuria and renal failure. If a transfusion reaction is suspected, the transfusion should be stopped immediately and IV fluids should be administered, to prevent shock.



[ Q: 932 ] MRCPass - Haematology

A 55 year old man enquires about risks of blood transfusion.

*Which of the following infections is blood screened for?*

- 1- Varicella zoster
- 2- Hepatitis B
- 3- Cytomegalovirus
- 4- Malaria
- 5- Salmonella

Answer & Comments

Answer: 2- Hepatitis B

CMV, malaria and salmonella can all be transmitted by blood products.

In the UK, routine testing for donor blood is for :

HIV

Hep B & C

Syphilis

ABO + RhD



[ Q: 933 ] MRCPass - Haematology

A 60 year old man presents with extensive bruising. He has a history of fatigue and dizziness for the past few months. On examination, he has a purpuric rash on his trunk and limbs. Investigations show :

Hb 7.5 g/dl

MCV 105 fl

WCC  $7 \times 10^9/L$

platelets  $100 \times 10^9/L$

Prothrombin time 20 (12-17)s

Fibrinogen 90 (150-460) mg/dL

Blood film: 50% blast cells.

*What is the clinical picture consistent with?*

- 1- Erythroleukaemic reaction
- 2- Aplastic anaemia
- 3- Disseminated intravascular coagulation
- 4- Haemolytic anaemia
- 5- Immune thrombocytopenic purpura

Answer & Comments

Answer: 3- Disseminated intravascular coagulation

The clinical diagnosis is likely to be acute myeloblastic leukaemia (AML). AML subtypes are distinguished from other related blood disorders by the presence of more than 30% blasts in the blood, bone marrow, or both. One of the common complications is DIC, which results in an elevated prothrombin time, decreased fibrinogen level and increased fibrin degradation products. Acute promyelocytic leukemia (APL), also known as M3, is the most common subtype of AML

associated with DIC. In leucoerythroblastic picture, nucleated red cells and white cell precursors are found in the peripheral blood.



[ Q: 934 ] MRCPass - Haematology

A 60 year old woman has had a prolonged ITU stay due to severe pneumonia and sepsis requiring mechanical ventilation. She was noted to have worsening anaemia following discharge from ITU at 4 weeks. Her Hb is 6 g/dl, MCV 109 fl, WCC  $2.2 \times 10^9/L$ , platelets  $110 \times 10^9/L$ .

*What is the likely cause of anaemia?*

- 1- Upper GI bleed
- 2- Aplastic anaemia
- 3- Acute myeloid Leukaemia
- 4- Immune thrombocytopenic purpura
- 5- Acute folate deficiency

Answer & Comments

Answer: 5- Acute folate deficiency

A patient who has been in intensive care for a significant period may not be getting enough folate, especially with increased needs for recovery. An acute deficiency state may thus develop. This would precipitate a pancytopenia and macrocytic anaemia.



[ Q: 935 ] MRCPass - Haematology

A 20 year old female presents with severe colicky abdominal pain, vomiting and constipation of 3 days duration.

She had a previous history of admission to hospital with similar features.

Her abdominal x-ray and ultrasound scan were normal. She was treated with antibiotics, analgesics and antiemetics. Her urine was discoloured and she had a tonic-clonic seizure whilst on the ward.

*What is the likely diagnosis?*

- 1- Variegate porphyria



- 2- Acute intermittent porphyria
- 3- Fabry's disease
- 4- Gaucher's disease
- 5- Mature onset diabetes of the young

#### Answer & Comments

**Answer:** 2- Acute intermittent porphyria

Acute intermittent porphyria is autosomal dominant disorder caused by a defect in porphobilinogen deaminase activity. If peripheral neuropathy, such as pain in the back and legs or parathesias occurs it is almost always preceded by abdominal pain.

Other autonomic neuropathies that may be seen are sweating, vascular spasm, labile hypertension, and sinus tachycardia. Central nervous dysfunction can be seen as well with seizures, coma, bulbar paralysis, or cerebellar involvement.

The defect in porphobilinogen deaminase causes a build up of ALA and porphobilinogen (PBG) which causes their increased secretion in the urine.



#### [ Q: 936 ] MRCPass - Haematology

A 35 year old lady has had frequent menorrhagia over the last few months. She feels well but looks pale on examination.

Investigations reveal:

Hb 8.6 g/dl

MCV 70 fl

MCHC 27 (32-35) g/dl

WCC  $7 \times 10^9/L$

platelets  $225 \times 10^9/L$

Iron 9 (14-29)  $\mu\text{mol/l}$

Ferritin 12 (15-200)  $\mu\text{mol/l}$

total iron binding capacity 95 (45-72)  $\mu\text{mol/l}$

*What feature is likely to be found on the blood film?*

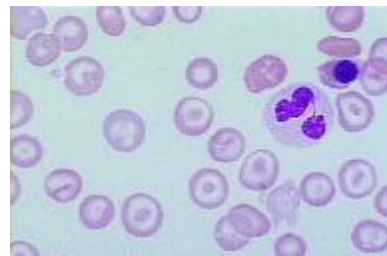
- 1- Fragmented cell
- 2- Helmet cell
- 3- Polychromasia
- 4- Spherocytes
- 5- Target cells

#### Answer & Comments

**Answer:** 5- Target cells

This lady has iron deficiency anemia. Common blood film features are pencil cells, target cells and poikilocytosis.

Causes of target cells are liver disease, post splenectomy, iron deficiency and thalassemia.



Target Cells



#### [ Q: 937 ] MRCPass - Haematology

A 50 year old man has a history of epistaxis. He is also generally very tired. On examination, he has no lymphadenopathy or splenomegaly.

His blood tests reveal:

Hb 7.6 g/dl

MCV 90 fl

MCHC 32 g/dl (32-35)

WCC  $3 \times 10^9/L$

Neutrophils  $1.5 \times 10^9/L$

platelets  $29 \times 10^9/L$

urea 8  $\mu\text{mol/l}$

creatinine 125  $\mu\text{mol/l}$

sodium 143 mmol/l

potassium 3.6 mmol/l

bilirubin 25  $\mu\text{mol/l}$

AST 18 U/l

ALP 150 U/l

albumin 32 g/l

LDH 120 U/l (10-250)

*Which of the following investigations would be most helpful?*

- 1- CT of abdomen

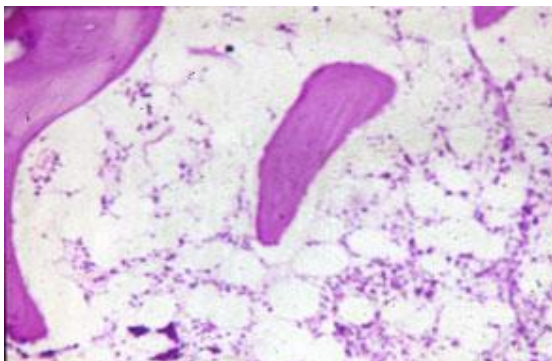
- 2- Genetic studies
- 3- PET scan
- 4- Bone marrow aspiration and cytology
- 5- Bone marrow biopsy

#### Answer & Comments

**Answer:** 5- Bone marrow biopsy

On the blood tests, there is aplastic anaemia which could be due to infiltration by a tumour, autoimmune or drug induced. Although both bone marrow aspiration is useful, a biopsy is required to assess cellularity and to exclude abnormal infiltration due to a malignant process. In aplastic anaemia, erythropoietic cells, megakaryocytes and granulocytic cells are reduced.

Bone marrow aspiration involves aspirating fluid contents of marrow whilst bone marrow biopsy involves more force to obtain bone marrow core. See pictures:



Aplastic Anaemia - Bone Marrow Biopsy



#### [ Q: 938 ] MRCPass - Haematology

A 45 year old woman presents with haemetemesis. She has a haemoglobin (Hb) of 4.5 g/dL and platelet count of  $350 \times 10^9/L$ .

*Which of the following is the most appropriate product or drug to use?*

- 1- Fresh frozen plasma (FFP)
- 2- Iv methylprednisolone
- 3- Plasma protein fraction
- 4- Packed red cells

- 5- Iron infusion

#### Answer & Comments

**Answer:** 4- Packed red cells

The patient who is anaemic and bleeding needs a blood transfusion with packed red cells (blood). This also contains some white cells, platelets & a small amount of plasma plus 60 - 100 ml of additive.



#### [ Q: 939 ] MRCPass - Haematology

A 75 year old woman with chronic myeloid leukemia (CML), treated with hydroxyurea and interferon for 12 years suffered from gradual disease progression for one year.

Investigations show :

Haemoglobin 11.6 g /dL

white cell count  $47 \times 10^9/L$  (neutrophils, 80%; lymphocytes, 13%; metamyelocytes, 6%; blasts, 1%)

platelet count  $1220 \times 10^9/L$

*What should the patient be treated with?*

- 1- Cyclophosphamide
- 2- Prednisolone
- 3- Radiotherapy
- 4- Desferrioxamine
- 5- Imatinib

#### Answer & Comments

**Answer:** 5- Imatinib

Gleevec (imatinib mesylate, Novartis), is an oral drug which interferes with the action of the abnormal Bcr-Abl tyrosine kinase in CML white blood cells.

Before Gleevec, the most common drugs used to treat CML were the oral treatments hydroxyurea and busulphan.

An intravenous treatment, cytarabine, is sometimes used in combination with immune therapy (interferon). Bone marrow or stem cell transplantation tends to be limited to younger patients.



[ Q: 940 ] MRCPass - Haematology

A 30 year old woman is being investigated for right upper quadrant pains. She reports occasional episodes of jaundice, especially associated with infections. Her mother, sister and aunt has previously had gallstones. On examination, she has splenomegaly. Her FBC is normal, but her bilirubin is mildly elevated.

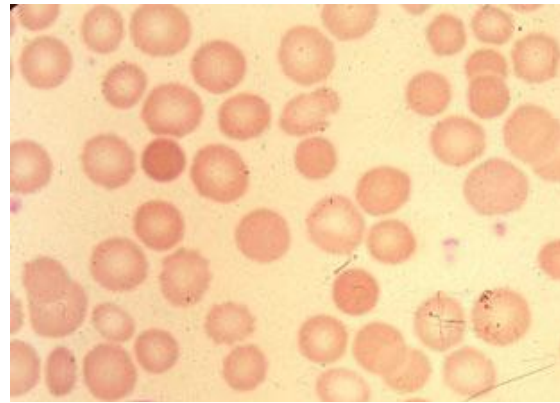
*What is the likely cause for her probable gallstones?*

- 1- Sickle cell disease
- 2- Hereditary spherocytosis
- 3- Beta thalassemia
- 4- Gilbert's syndrome
- 5- Paroxysmal nocturnal haemoglobinuria

Answer & Comments

**Answer:** 2- Hereditary spherocytosis

Hereditary spherocytosis is inherited in an autosomal dominant fashion. It is characterised by increased red cell fragility. There is increased haemolysis during infections. Gallstones are commonly associated. Management is usually supportive, although some cases require splenectomy to reduce transfusion requirements.



Spherical red cells in hereditary spherocytosis



[ Q: 941 ] MRCPass - Haematology

A 30 year old patient has significant GI bleeding, but is concerned about the risks of blood transfusion.

*Which of the following is screened for in donated blood?*

- 1- JC virus
- 2- Human T cell leukaemia virus
- 3- HIV-1
- 4- New variant CJD
- 5- Toxoplasmosis

Answer & Comments

**Answer:** 3- HIV-1

In the UK every blood donation is tested for evidence of hepatitis B, hepatitis C, HIV-1, HIV-2 and syphilis. However, although there are recent concerns regarding transmission of new variant CJD, there are no reliable screening methods yet.



[ Q: 942 ] MRCPass - Haematology

A 35 year old woman with a haematological condition has been transfused with group specific platelets on several occasions. Her platelet count drops quickly 5 days following platelet transfusion.

*What should she be treated with?*

- 1- Fresh frozen plasma

- 2- Cryoprecipitate
- 3- Packed red cells
- 4- Intravenous immunoglobulin
- 5- Factor VIII

#### Answer & Comments

**Answer:** 4- Intravenous immunoglobulin

Post transfusion purpura is a transfusion reaction occurring occurs 5 - 14 days after transfusion of platelets or fresh frozen plasma. This occurs when individuals lacking the PLA-1 antigen are transfused with blood containing PLA-1 positive platelets. It is uncommon as only 2-3% of the population are PLA-1 negative.

Treatment of choice is intravenous immunoglobulin or plasma exchange. Further platelet transfusions should be washed or be HPA-1A negative.



#### [ Q: 943 ] MRCPass - Haematology

A 70 year old female presents with left upper quadrant pain and multiple ecchymoses (bruising).

Investigations:

hemoglobin 9.5 g/dL

platelet count  $30 \times 10^9/L$

white cell count of  $8.2 \times 10^9/L$

The bone marrow biopsy is hypercellular (75%) and shows diffuse infiltration by large atypical cells with abundant cytoplasm.

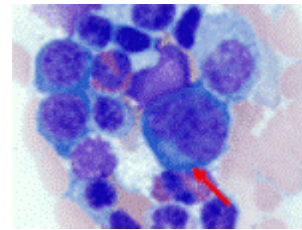
**What is the diagnosis?**

- 1- Acute myeloid leukaemia
- 2- Chronic lymphocytic leukaemia
- 3- Hodgkin's lymphoma
- 4- Waldenstrom's macroglobulinaemia
- 5- Polycythaemia rubra vera

#### Answer & Comments

**Answer:** 2- Chronic lymphocytic leukaemia

Chronic lymphocytic leukaemia arises from the neoplastic proliferation of relatively mature lymphocytes which infiltrate the blood, bone marrow or lymphoreticular structures. Most are clonal malignancies of B lymphocytes rather than T lymphocytes. Bone marrow aspiration / biopsy - typically there is infiltration by lymphocytes.



Diffuse infiltration by large atypical cells in CLL



#### [ Q: 944 ] MRCPass - Haematology

A 35 year old man who works in a factory has accidentally drunk a large amount of dye. He is brought to the hospital looking a blue colour.

His Hb is 16 g/dL. Blood gases show a pH of 7.37,  $pO_2$  of 13 kPa,  $pCO_2$  of 4.5 kPa and  $O_2$  sats of 80% on the sats monitor.

**Which is the diagnosis?**

- 1- Methaemoglobinaemia
- 2- Down's syndrome
- 3- Fallot's tetralogy
- 4- Carbon monoxide poisoning
- 5- Polycythaemia rubra vera

#### Answer & Comments

**Answer:** 1- Methaemoglobinaemia

Methaemoglobinaemia is the most likely diagnosis due to ingestion of aniline dye in this case. The  $pO_2$  is often normal but the oxygen saturations are reduced in methaemoglobinaemia.



## [ Q: 945 ] MRCPass - Haematology

A 40 year old woman has a long history of anaemia, and is not compliant with medications.

Investigations show :

Haemoglobin 7.8 g/dL (11.3-16.5)

MCV 85 fl (80-96)

MCH 26 pg (28-32)

WCC  $7 \times 10^9/L$

Platelets  $160 \times 10^9/L$

Serum B12 130 ug/L (160-760)

Red cell folate 95 ug/L (160-640)

Serum ferritin 11 ug/L (15-300)

*Which of the following antibodies is likely to be present with the condition?*

- 1- Antigliadin antibody
- 2- Anti intrinsic factor antibody
- 3- Anti parietal cell antibody
- 4- Anti nuclear antibody
- 5- Anti phospholipid antibody

## Answer &amp; Comments

Answer: 1- Antigliadin antibody

There are mixed iron and folate deficiency due to coeliac disease. This causes a normal MCV (dimorphic picture because of both micro and macrocytic features). Antibodies which are present in coeliac disease are : antiendomysial and antigliadin. vitamin B<sub>12</sub> concentrations normalize on a gluten-free diet alone, but symptomatic patients may require supplementation.



## [ Q: 946 ] MRCPass - Haematology

A 60 year old lady is investigated for recurrent episodes of gout. On examination, she looked plethoric and has a 6 cm splenomegaly. She has the following results:

Hb 18.9 gm/dl

Hct 0.612

Platelet count  $468 \times 10^9/L$

ESR 1 mm/1st hour

coagulation screen normal

*What is the diagnosis?*

- 1- Essential thrombocythaemia
- 2- Chronic myeloid leukaemia
- 3- Polycythaemia rubra vera
- 4- Idiopathic thrombocytopenic purpura
- 5- Thalassemia

## Answer &amp; Comments

Answer: 3- Polycythaemia rubra vera

The criteria for PRV are:

- 1) increased red cell mass
- 2) splenomegaly
- 3) increased platelets, leucocytes, INCREASED NAP score and B12 (increased B12 binding protein release).

Gout occurs due to increased cell turnover, cerebral and myocardial ischaemia occurs due to fall in perfusion and raised blood viscosity.

The NAP score is a semiquantitative cytochemical assessment of alkaline phosphatase in neutrophils. The NAP score is based on staining intensity, with a possible score of 0-400. It differentiates chronic myeloid leukaemia (low) from reactive leucocytosis (high), eg bacterial infection. It may assist in the differentiation of polycythaemia rubra vera (high) from other causes of erythrocytosis (normal).



## [ Q: 947 ] MRCPass - Haematology

A 25 year old woman presented to the hematology clinic with a 5 year history of pallor and anemia. On physical examination, the patient was found to have mild splenomegaly.



Results show :

Hemoglobin 7.9 g/dL

platelet count of  $226 \times 10^9/L$

MCV 68 fl

MCH was 20 pg (24.0-31.0 pg)

MCHC 30.1 g/dL (32.0-36.0 g/dL)

serum iron 31.6  $\mu\text{mol/L}$  (9.0-26.9)

ferritin 380 ng/mL (22-400 ng/mL)

transferrin 161 mg/dL (185-370 mg/dL)

Bone marrow aspirate demonstrated significant hypercellularity associated with marked erythroid hyperplasia.

Stainable iron stores were increased. A striking feature was the presence of numerous blasts in which the perinuclear iron granules encircled more than one third of the nuclear circumference.

*What is the diagnosis?*

- 1- Haemochromatosis
- 2- Sideroblastic anaemia
- 3- Multiple myeloma
- 4- Waldenstrom's macroglobulinaemia
- 5- Thalassemia

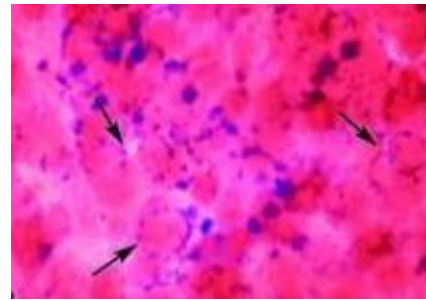
#### Answer & Comments

Answer: 2- Sideroblastic anaemia

Sideroblasts are abnormal red cell precursors with iron loaded mitochondria, forming a ring around the nucleus. Sideroblastic anaemia is associated with alcohol, lead, drugs and myelodysplasia. There is a defect in haem synthesis, thus excess loading of iron to compensate in red cell precursors and into iron stores, sometimes causing haemosiderosis in the liver, and desferrioxamine therapy may help.

Ringed sideroblasts are precursors and hence are found in the bone marrow. Anti tuberculous drugs interfere with haem metabolism by interfering with pyridoxine

availability. Some cases respond to pyridoxine therapy (not panthotenic acid).



[ Q: 948 ] MRCPass - Haematology

A 15 year old Filipino girl is noted to have a hemoglobin of 10.6 g/dl with an MCV of 65 fl on routine testing.

She reports regular menses lasting 4-5 days each cycle. She has no specific complaints. She is unaware of a family history of anemia. On examination, there is no hepatosplenomegaly, jaundice, or scleral jaundice.

*What is the likely diagnosis?*

- 1- Iron deficiency
- 2- Lead poisoning
- 3- Thalassemia
- 4- Sickle cell anaemia
- 5- Acute lymphoblastic leukaemia

#### Answer & Comments

Answer: 3- Thalassemia

This patient is likely to have thalassemia trait (probably alpha thalassemia). Those with alpha thalassemia trait are clinically normal, but their hemoglobin is slightly low and their hemogram demonstrates microcytic indices.



[ Q: 949 ] MRCPass - Haematology

A 50 year old woman has a life-long history of anemia. Her mother has a similar history. Laboratory values show

Haemoglobin 10.5 g/dl

Haematocrit 33



MCV 66 fl

Blood film: microcytic, normochromic red cells. A few elliptocytes and target cells are noted.

*Which of the following is the most likely condition?*

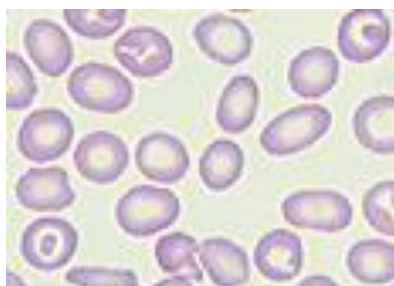
- 1- Iron deficiency anaemia
- 2- Hereditary spherocytosis
- 3- Thalassemia
- 4- G6PD deficiency
- 5- Autoimmune haemolytic anaemia

#### Answer & Comments

Answer: 3- Thalassemia

This patient has either thalassemia trait or beta thalassemia minor. Mutations in globin genes cause thalassemias. Alpha thalassemia affects the alpha-globin gene(s). Beta thalassemia affects one or both of the beta-globin genes. In beta thalassemia major (ie, homozygous beta thalassemia), the production of beta-globin chains is severely impaired, because both beta-globin genes are mutated. In beta thalassemia minor, one of the beta-globin chains is impaired.

The severe anemia resulting from this disease, if untreated, can result in high-output cardiac failure, which causes the highest mortality.



Blood film showing target cells (low left and upper right) as well as elliptocyte in the lower left



[ Q: 950 ] MRCPass - Haematology

A 48 year old male was referred for

investigation of anemia.

Results show :

hemoglobin of 7.2 g/dL

a white blood cell count of  $3 \times 10^9/L$

platelet count of  $60 \times 10^9/L$

On physical exam, his spleen was enlarged.

Peripheral blood showed teardrops and a leukoerythroblastic smear. Bone marrow biopsy showed increased numbers of megakaryocytes and grade III fibrosis.

*What is the diagnosis?*

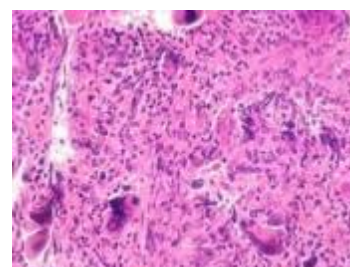
- 1- Folate deficiency anaemia
- 2- Coomb's positive haemolytic anaemia
- 3- Myelofibrosis
- 4- Multiple myeloma
- 5- Chronic myeloid leukaemia

#### Answer & Comments

Answer: 3- Myelofibrosis

In myelofibrosis, splenomegaly occurs with a fibrotic process. Haemolytic anaemia is not typically steroid responsive.

Leukoerythroblastic anaemia (red cell and white cell precursors) are seen on the blood film. Bone pain, bleeding (platelet dysfunction) may occur but are not characteristic. Fibrous tissue infiltration of the bone makes it difficult to aspirate bone marrow.



Marrow biopsy demonstrating significant fibrosis



## [ Q: 951 ] MRCPass - Haematology

A 16 yearold boy with sickle cell disease complains of acute breathlessness. He has a respiratory rate of 35 breaths per minute. O<sub>2</sub> saturations are 75% on room air and 85% on 100% oxygen. There is reduced air entry bilaterally, but no added sounds. Investigations show :

pO<sub>2</sub> 6.2 kPa

CXR: bilateral basal infiltrates

Hb 7.5 g/dl

WCC 14 x 10<sup>9</sup>/L

platelets 200 x 10<sup>9</sup>/L

*The most appropriate management is:*

- 1- IV antibiotics
- 2- Non invasive ventilation
- 3- IV fluids
- 4- Blood transfusion
- 5- Urgent exchange transfusion

## Answer &amp; Comments

Answer: 5- Urgent exchange transfusion

The diagnosis is acute chest syndrome. The acute chest syndrome (ACS) in sickle cell disease (SCD) can be defined as:

1. a new infiltrate on chest x-ray
2. associated with one or more NEW symptoms: fever, cough, sputum production, dyspnea, or hypoxia.

Exchange blood transfusions are indicated in cases of cerebrovascular accidents and acute chest syndrome.

They are performed occasionally in patients with acute sequestration crisis or in cases of priapism that do not resolve after adequate hydration and analgesia . Exchange transfusion consists of replacing the patient's RBCs by normal donor RBCs, decreasing HbS to less than 30%.



## [ Q: 952 ] MRCPass - Haematology

A 35 year old patient has schizophrenia. He is on clozapine, temazepam and amoxycillin for a recent chest infection.

He is admitted unwell the following blood results:

Hb 2.0 g/dl, WCC 2 x 10<sup>9</sup>/L, Neutrophils 0.3 x 10<sup>9</sup>/L, platelets 180 x 10<sup>9</sup>/L, urea 6 mmol/l, creatinine 80 mmol/l, sodium 140 mmol/l, potassium 3.8 mmol/l.

*Which of these is likely to be the cause of neutropenia?*

- 1- Clozapine
- 2- Amoxycillin
- 3- Myelofibrosis
- 4- Myeloma
- 5- Sepsis

## Answer &amp; Comments

Answer: 1- Clozapine

Clozapine is associated with neutropenia and agranulocytosis are main haematological complications. Severe neutropenia can be treated with G-CSF.



## [ Q: 953 ] MRCPass - Haematology

A 30 year old male presents with painless cervical and axillary lymphadenopathy. He also complains of fever and pruritus. Lymph node biopsy demonstrates Reed-Sternberg cells.

*Which feature would indicate the worst prognosis?*

- 1- Sweating
- 2- Inguinal lymphadenopathy
- 3- Bone marrow involvement
- 4- Pruritus
- 5- Fever

## Answer &amp; Comments

**Answer:** 3- Bone marrow involvement

The patient has Hodgkin's disease. Involvement of the bone marrow would classify the patient as stage IV (modified Ann Arbor classification) indicating poor prognosis.

\* Stage I is involvement of a single lymph node region (I) or single extralymphatic site (Ie)

\* Stage II is involvement of two or more lymph node regions on the same side of the diaphragm (II) or of one lymph node region and a contiguous extralymphatic site (Ile)

\* Stage III is involvement of lymph node regions on both sides of the diaphragm, which may include the spleen (IIIs) and/or limited contiguous extralymphatic organ or site (IIle, IIles)

\* Stage IV is disseminated involvement of one or more extralymphatic organs



Reed Sternberg cell showing prominent nucleoli



## [ Q: 954 ] MRCPass - Haematology

A 25 year old lady has a mother who has had a splenectomy for anaemia. She presents unwell with abdominal pain and vomiting. Examination reveals a tender right upper quadrant and jaundice, as well as 4 cm splenomegaly.

Her bloods show :

Hb 9.0 g/dl                      MCV 95 fl  
MCHC 33 g/dl (32-35)    WCC  $11 \times 10^9/L$   
platelets  $200 \times 10^9/L$

reticulocytes  $180 \times 10^9/L$  (50-100)

urea 5.5  $\mu\text{mol/l}$                       creatinine 65  $\mu\text{mol/l}$

sodium 137 mmol/l                      potassium 4.2 mmol/l

bilirubin 48  $\mu\text{mol/l}$                       AST 60 U/l

ALP 450 U/l                      albumin 38 g/l

LDH 650 U/l (10-250)

*Which one of the following is the likely diagnosis?*

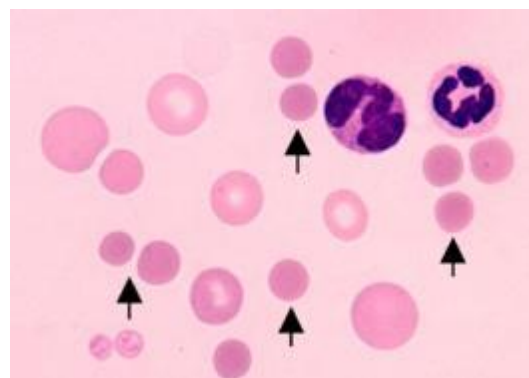
- 1- Autoimmune haemolytic anaemia
- 2- Pancreatitis
- 3- Hereditary spherocytosis
- 4- Sickle cell disease
- 5- Acute myeloid leukaemia

## Answer &amp; Comments

**Answer:** 3- Hereditary spherocytosis

Hereditary spherocytosis is most likely due to the family history and presentation. The blood tests show likely haemolysis. The history also suggests cholecystitis due to gallstones.

Gallstones occur in patients with recurrent haemolysis (pigmented stones).



Spherocytes are small, round erythrocytes that lack central pallor (arrows)



## [ Q: 955 ] MRCPass - Haematology

A 22 year old woman presents with an acute pulmonary embolism in the 8th week of pregnancy.

*What is the most appropriate treatment for this patient throughout her pregnancy?*

- 1- Clopidogrel
- 2- Intravenous heparin
- 3- Subcutaneous low molecular weight heparin
- 4- Dipyridamole
- 5- Warfarin

#### Answer & Comments

Answer: 3- Subcutaneous low molecular weight heparin

Warfarin should only be used in the third trimester. It is teratogenic and use in the first 2 trimesters are not recommended. At present, the patient should have LMWH.



#### [ Q: 956 ] MRCPass - Haematology

A 45 year old woman has von Willebrand's disease. She is going to undergo tooth extraction.

*Which one of the following is the best management option in mild von Willebrand's disease prior to surgery?*

- 1- DDAVP
- 2- Factor VIII concentrate
- 3- Fresh frozen plasma
- 4- Factor IX concentrate
- 5- Blood transfusion

#### Answer & Comments

Answer: 1- DDAVP

Out of all the choices, DDAVP is the most pragmatic option. Fresh frozen plasma or von Willebrand factor can be used in cases of severe bleeding but should not be used in mild cases.



#### [ Q: 957 ] MRCPass - Haematology

A 80 year old woman presents with generalised abdominal pains.

investigations show :

Hb 10.3g/dl                      WBC  $17 \times 10^9/L$   
 plts  $80 \times 10^9/L$                 MCV 85 fl

Blood film shows nucleated red cells, small numbers of promyelocytes, myelocytes and metamyelocytes

*What is the most likely cause of these haematology results?*

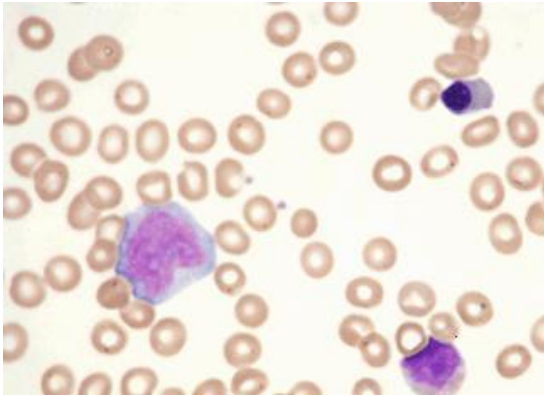
- 1- Folate deficiency
- 2- Sickle cell disease
- 3- Osteoporosis
- 4- Thalassaemia minor
- 5- Myelofibrosis

#### Answer & Comments

Answer: 5- Myelofibrosis

Blood film findings describe a leucoerythroblastic blood picture which is characterized by granulocyte and erythroid precursors in the peripheral blood. Common causes include :

myelofibrosis  
 bone marrow infiltration with leukaemia  
 severe megaloblastic anaemia  
 sickle cell crisis  
 thalassaemia major  
 osteopetrosis



A leucoerythroblastic picture - presence of immature myeloid and nucleated red cells in the peripheral blood



[ Q: 958 ] MRCPass - Haematology

A 9 year old boy is unwell having ingested a bottle of dye. On examination, he is afebrile but has tachypnea, cyanosis, and drowsiness. He is given 100% oxygen but does not improve.

*What is the most likely diagnosis?*

- 1- Methaemoglobinaemia
- 2- Sickle cell anaemia
- 3- Thalassemia
- 4- Congenital cyanotic heart disease
- 5- Henoch Schönlein purpura

Answer & Comments

Answer: 1- Methaemoglobinaemia

Cyanosis that is unresponsive to oxygen therapy is most likely due to methemoglobinemia.

Methaemoglobinaemia is a cause of cyanosis because it causes the formation of reduced Hb >1.5 g/dl. It is due to oxidised iron from Fe<sup>2+</sup> to Fe<sup>3+</sup> in Hb and may cause precipitation as Heinz bodies.

Chemicals which are oxidising agents may cause this e.g. aniline dyes, chlorates, nitrates, nitrophenols, primaquine and sulphonamides. Treatment is with methylene blue if methaemoglobin >3.0g/dL.



[ Q: 959 ] MRCPass - Haematology

An 75 year old woman is admitted for routine surgery. She is found to have a haemoglobin of 7.8 g/dL with hypochromic, microcytic indices and the blood film shows pencil cells.

*What is the most appropriate management?*

- 1- Transfuse blood
- 2- Continue with surgery
- 3- Send haematinics and treat with ferrous sulphate
- 4- Send haematinics and treat with Vitamin B<sub>12</sub>
- 5- Request a bone marrow examination to exclude myelodysplasia

Answer & Comments

Answer: 3- Send haematinics and treat with ferrous sulphate

Iron deficiency is a common cause of anaemia, especially in the elderly. In this age group, it is often due to poor dietary intake, although OGD or colonoscopy may need to be done to exclude GI bleeding as a cause of blood loss.



[ Q: 960 ] MRCPass - Haematology

A 12 year old boy presents with breathlessness and cough. On examination he is pale and jaundiced. His Hb is 5.5 g/dl and peripheral smear shows 50% sickled cells with <1% reticulocytes.

*Which of the following is responsible for his condition?*

- 1- Salmonella Infection
- 2- Pneumococcal infection
- 3- H. Influenzae infection
- 4- Cytomegalovirus infection
- 5- Parvovirus infection

Answer & Comments

Answer: 5- Parvovirus infection



The child has sickle cell anaemia with an aplastic crisis. This is most commonly precipitated by parvovirus B19. Salmonella can cause osteomyelitis and H influenzae can cause pneumonia in patients with sickle cell disease.



[ Q: 961 ] MRCPass - Haematology

A 48 year old man being has polyuria, polydipsia and impotence.

On examination, he has a palpable enlarged liver.

Investigations show :

Alanine aminotransferase 80 U/L (5-35)

Aspartate aminotransferase 92 U/L (1-31)

Albumin 36 g/l Fasting plasma glucose 7.4 (3.0-6.0)

Ferritin 800 ug/L (15-300)

*Which one of following is the next best investigation?*

- 1- Oral glucose tolerance test
- 2- Serum transferrin receptors
- 3- Liver biopsy
- 4- Transferrin saturation
- 5- Bone marrow biopsy

Answer & Comments

Answer: 4- Transferrin saturation

The diagnosis is haemochromatosis suggested by high ferritin. The best test now is transferrin saturation. If this is high, HFE gene analysis should also be performed.



[ Q: 962 ] MRCPass - Haematology

A 65 year old woman presents with a 6 month history of back pain.

She also mentions polyuria and lethargy.

Investigations reveal:

haemoglobin 9.2 g/dL (11.5 - 16.5)

white cell count  $3.5 \times 10^9$  /L (4-11)

platelet count  $275 \times 10^9$  /L (150 - 400)

total protein 85 g/L (61 - 76)

albumin 32 g/L (37 - 49)

urea 18 mmol/l (3-7)

creatinine 350 micromol/L (60 - 110)

calcium 2.85 mmol/l (2.25-2.7)

plasma glucose 5.5 (3.0 - 6.0)

urine dipstick analysis protein + blood +

renal ultrasound normal sized kidneys

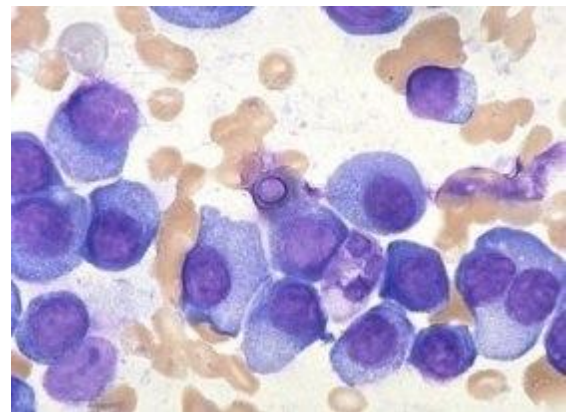
*Which one of the following investigations is appropriate?*

- 1- Liver ultrasound
- 2- Thrombophilia screen
- 3- Serum electrophoresis
- 4- HAM test
- 5- Thrombin time

Answer & Comments

Answer: 3- Serum electrophoresis

Anaemia, bone pain and hypercalcaemia are typical presenting features of multiple myeloma. Serum electrophoresis will show a monoclonal band of either IgG, IgM or IgA variety. Bence Jones protein may also be found in the urine. About 15% of patients have BJ protein in their urine without a paraproteinaemia.



Plasma cells in multiple myeloma





## [ Q: 963 ] MRCPass - Haematology

A 13 year old female with known sickle cell anaemia has been unwell with fevers, anorexia and severe pains in the muscles and joints of her upper and lower limbs.

Her blood tests show :

Hb 4 g/dl

WCC  $3.9 \times 10^9/L$

Plt  $75 \times 10^9/L$

Absolute reticulocyte count 0.3(0.5-1.5)

LDH 280 (85 - 285) IU/L

Bilirubin 15 (1-22)  $\mu\text{mol/l}$

Blood film reveals sickle cells with absence of polychromasia.

*What is the likely scenario?*

- 1- Aplastic sickle crisis due to parvovirus
- 2- Acute haemolysis
- 3- Splenic sequestration
- 4- Sickle chest syndrome
- 5- Folate deficiency

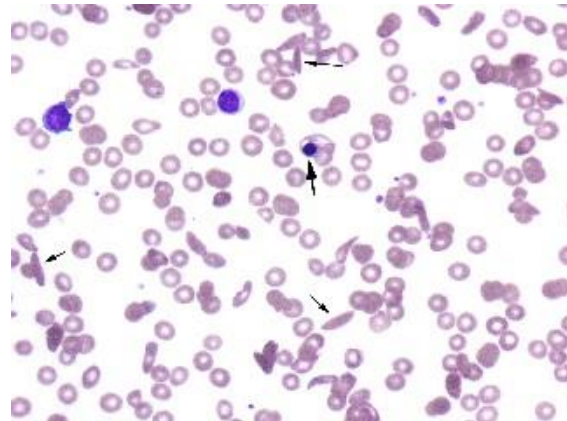
## Answer &amp; Comments

Answer: 1- Aplastic sickle crisis due to parvovirus

The most likely cause is aplastic crisis, the commonest cause being parvovirus. The reticulocyte count is low, bilirubin is normal and LDH is normal.

Polychromasia is the presence of grey coloured red cells on film, indicating presence of increased reticulocytes.

The lack of polychromasia on the blood film suggests aplastic anaemia.



Sickle Cell anaemia Aplastic Crisis. Numerous sickled RBC's are present (small arrows) and a single nucleated RBC is noted (large arrow). Note the absence of polychromasia.



## [ Q: 964 ] MRCPass - Haematology

A 70 year old man is admitted for investigation of jaundice and anorexia for several weeks. 6 weeks ago, he had been prescribed a two week course of Augmentin by his GP for a severe upper respiratory tract infection and was also taking Ibuprofen for gout. He lives alone and has not had recent travel. He drinks 2 units of alcohol a week.

Investigations reveal:

Albumin 40 g/L

Bilirubin 255  $\mu\text{mol/L}$  (1-22)

AST 260 iu/L (5-35)

Alkaline Phosphatase 220 iu/l (50-110)

Abdominal ultrasound reveals gallstones but no evidence of cholecystitis.

*What is the most likely cause of the jaundice?*

- 1- Allopurinol
- 2- Augmentin
- 3- Alcoholic liver disease
- 4- Viral hepatitis
- 5- Ibuprofen

## Answer &amp; Comments

Answer: 2- Augmentin

The blood results are consistent with cholestatic jaundice. Co-amoxiclav (augmentin) is a well known cause of this. There is often a latency time between the use of drug and onset of cholestatic jaundice. Studies of case reports showed that the onset of jaundice is typically from 2 weeks to 6 weeks for penicillins.

Some drugs cause a reaction even later - several months. However, one should scrutinise the data in your exam question because the structure may be different.



[ Q: 965 ] MRCPass - Haematology

A 27 year old woman has routine blood tests during her pregnancy.

Hb 9.8 g/dl

WBC  $5.4 \times 10^9/L$

Plts  $260 \times 10^9/L$

MCV 69 fl

MCH 17.2

*What is the most likely diagnosis?*

- 1- Folate deficiency
- 2- Beta thalassemia trait
- 3- B12 deficiency
- 4- Sideroblastic anaemia
- 5- Anaemia of chronic disease

Answer & Comments

Answer: 2- Beta thalassemia trait

Iron deficiency anaemia and thalassemia trait are the two most likely diagnoses of microcytic anaemia. Iron deficiency is best diagnosed by a low ferritin level. Beta thalassemia trait is diagnosed by the presence of a raised HbA2 (with Hb electrophoresis).



[ Q: 966 ] MRCPass - Haematology

A 42 year old woman with a long history of drinking alcohol has epilepsy. She

has been on phenytoin and carbamazepine since the diagnosis was made 5 years ago. Investigations reveal:

Haemoglobin 9.5 g/dL (13-16)

MCV 118 fL (80-96)

white cell count  $2.5 \times 10^9/L$  (4-11)

platelet count  $72 \times 10^9/L$  (150-400)

*What is the most likely explanation for these results?*

- 1- Myelodysplasia
- 2- Aplastic anaemia
- 3- Folic acid deficiency
- 4- Side effect of carbamazepine
- 5- Chronic lymphocytic leukaemia

Answer & Comments

Answer: 3- Folic acid deficiency

Folic acid deficiency would fit the clinical description and is a known adverse effect of long term phenytoin therapy.



[ Q: 967 ] MRCPass - Haematology

A 40 year old lady who has been on warfarin for deep venous thrombosis presents with upper GI bleeding. Her INR was 9.1.

*What is the appropriate treatment?*

- 1- Protamine concentrate
- 2- Platelet transfusion
- 3- Cryoprecipitate
- 4- Factor VIII transfusion
- 5- Tranexemic acid

Answer & Comments

Answer: 3- Cryoprecipitate

Fresh frozen plasma and cryoprecipitate are employed in treating patients with coagulopathies due to deficiency of one or

more coagulation factors. These conditions may occur due to accelerated consumption of coagulation factors, (e.g. bleeding, DIC), impaired factor production states (vitamin K deficiency, warfarin effect, liver disease, congenital factor deficiencies).

Cryoprecipitate contains fibrinogen, Factor VIII, von Willebrand's Factor, Factor XIII, and fibronectin.



[ Q: 968 ] MRCPass - Haematology

A 65 year old woman presents with lethargy.

She has a Hb of 9.0 g/dl, WCC of  $12 \times 10^9/L$ , platelets of  $100 \times 10^9/dl$ , blood film shows spherocytes, polychromasia and smear cells. Direct Coomb's test is positive.

*Which is the likely cause of the anaemia?*

- 1- Thrombotic thrombocytopenic purpura
- 2- Autoimmune haemolytic anaemia
- 3- Idiopathic thrombocytopenic purpura
- 4- Hereditary spherocytosis
- 5- B12 deficiency

#### Answer & Comments

Answer: 2- Autoimmune haemolytic anaemia

The blood film and positive Coomb's test points towards autoimmune haemolytic anaemia. This may be related to a leukaemic process in the patient with also raised WCC and thrombocytopenia



[ Q: 969 ] MRCPass - Haematology

An 18 year old girl is being investigated for worsening menorrhagia and gum bleeding. She undergoes a series of blood tests which are shown below :

Hemoglobin 12.3 g/dl (10.5-13.5)

WBC  $7.6 \times 10^9/L$  (6.0-17.5)

Platelets  $328 \times 10^9/L$  (156-369)

APTT 52.6 s (28.0-38.0)

Bleeding Time 7 1/2 minutes (<5 minutes)

Prothombin Time 11.6 s (10.0-12.8)

Thrombin Time 17.3 s (16.0-22.0)

Factor VIII 0.18 U/ml (0.60-1.50)

Factor IX 0.92 U/ml (0.60-1.50)

vWF Ag 0.16 s (0.78-1.53)

VWF ristocetin cofactor <0.10 U/ml(0.50-1.50)

*Which of the following is the likely diagnosis?*

- 1- Von Willebrand's disease
- 2- Factor V leiden
- 3- Carrier for Haemophilia A
- 4- Acute myeloid leukaemia
- 5- Idiopathic thrombocytopenia

#### Answer & Comments

Answer: 1- Von Willebrand's disease

She is most likely to have type 1 Von Willebrand disease (vWD), where the prolongation of the APTT is due a low factor VIII level which occurs secondary to the low VWF level.

Von Willebrand disease (VWD) is a group of genetically heterogeneous disorders resulting in abnormal function of the Von Willebrand factor (VWF). More than 100 mutations have been described. Symptoms include mucocutaneous bleeding (epistaxis, easy bruising, prolonged bleeding after minor trauma, menorrhagia and gastrointestinal bleeding) of varying severity. Hemarthrosis is relatively uncommon. Unlike hemophilia, the mode of inheritance is predominantly autosomal dominant (some autosomal recessive variants have been described).

Type 1 vWD is characterized by a partial quantitative decrease of qualitatively normal vWF and FVIII.

Type 2A vWD is inherited is characterized by normal-to-reduced plasma levels of factor VIIIc (FVIIIc) and vWF.

Type 2B vWD is characterized by a reduction in the proportion of high molecular weight vWF multimers, while the proportion of low molecular weight fragments are increased.



[ Q: 970 ] MRCPass - Haematology

A 5 year old boy was brought to the emergency department by his mother for oozing blood from his mouth following a fall. His mother said that he tended to bleed for prolonged periods from his immunization sites, but there was no history of bruising or hematomas. The patient was on antibiotics for a recent ear infection. There was a family history of similar bleeding - his sister and mother being affected.

Blood tests show :

Hemoglobin 13.3 g/dl (10.5-13.5)

Hematocrit 35.4% (33.0-39.0)

WBC  $6.9 \times 10^9/L$  (6.0-17.5)

Platelets  $350 \times 10^9/L$  (156-369)

PT 12.3 s (10.0-12.8)

APTT 38.2 s (24.4-33.2)

Bleeding time 12 minutes (2-9)

*What is the diagnosis?*

- 1- Haemophilia A
- 2- Haemophilia B
- 3- Von willebrand's disease
- 4- Acute lymphoblastic leukaemia
- 5- Acute myeloid leukaemia

Answer & Comments

Answer: 3- Von willebrand's disease

In this case, the family history and also prolonged bleeding time suggests von Willebrand's disease. Von Willebrand's disease has mostly autosomal dominant inheritance.

Symptoms of von willebrand's disease include mucocutaneous bleeding (epistaxis, easy bruising, prolonged bleeding after minor trauma, menorrhagia and gastrointestinal bleeding) of varying severity. The quantitative assay (VWF AG) and functional assay (VWF ristocetin cofactor/ collagen binding capacity) are recommended for diagnostic purposes. Approximately 25% of patients with type 1 VWD have aPTT results outside of the reference range.

DDAVP can raise the levels of vWF in the blood.

Factor VIII concentrates and plasma products can be used.

Using the ear lobe method, a normal bleeding time is between 1 and 4 minutes. Using the forearm method, a normal bleeding time is between 2 and 9 minutes.



[ Q: 971 ] MRCPass - Haematology

A 75 year old lady has presented with symptoms consistent with a UTI. Her blood tests show Hb of 10.0 g/dl

WCC of  $45 \times 10^9/L$

platelets  $160 \times 10^9/L$

neutrophil count is  $12 \times 10^9/L$  (1.5-7)

lymphocyte count is  $27 \times 10^9$  (1.5-4)

*Which of the following tests is the best to elucidate a diagnosis?*

- 1- Bone marrow trephine
- 2- White cell immunophenotyping
- 3- Hb electrophoresis
- 4- Ultrasound of abdomen
- 5- Splenic biopsy

Answer & Comments

Answer: 2- White cell immunophenotyping

A high white cell count with predominant lymphocytosis and anaemia

suggests a possible leukaemia such as Chronic lymphocytic leukaemia. Immunophenotyping can be used for classification of undifferentiated leukemia as lymphoid or myeloid and subclassification of leukemias.



[ Q: 972 ] MRCPass - Haematology

A 28 year old woman attends A+E with a history of decreased consciousness. Her investigations show :

Hb 6.7 g/dl

WBC  $7.8 \times 10^9/L$

plt's  $15 \times 10^9/L$

APTT 34 secs

PT 16 secs

Fibrinogen 1.6 g/dl

Creatinine  $180 \mu\text{mol/l}$

Blood film: red cell fragmentation, polychromasia and Burr cells.

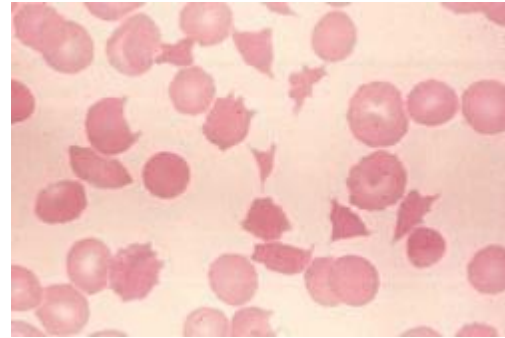
*What is the most likely diagnosis?*

- 1- Multiple myeloma
- 2- Thrombotic thrombocytopenia purpura
- 3- Severe iron deficiency
- 4- Disseminated intravascular coagulation
- 5- Acute lymphoblastic leukaemia

Answer & Comments

Answer: 2- Thrombotic thrombocytopenia purpura

Thrombotic thrombocytopenic purpura is a syndrome characterized by microangiopathic hemolytic anemia, thrombocytopenia, neurologic abnormalities, fever, and renal dysfunction. A spectrum of presentations related to thrombotic events can occur, altered consciousness, seizures, fever, myalgia and arthralgia occur. With the introduction of plasma exchange (recommended treatment), the survival rate has improved from approximately 3% prior to the 1960s to 82%.



The blood film in microangiopathic haemolytic anaemia demonstrating schistocytes(fragmented cells) and Burr cells.



[ Q: 973 ] MRCPass - Haematology

A 30 year old man presents with painless lumps in the neck. This has been present for the last 7 weeks. He has lost about 10 kgs in weight over the last six months and complains of fever with night sweats. He smokes 20 cigarettes a day.

On examination there are several enlarged lymph nodes in the left supraclavicular fossa. Investigations are as follows:

Hb 10.3 g/dL

MCV 85 fl

WBC  $16.0 \times 10^9/L$

Neutrophils 55%

Lymphocytes 34 %

ESR 57 mm/hour

*Which of the following tests would be most appropriate to confirm the diagnosis?*

- 1- Chest x ray
- 2- Kveim test
- 3- Sputum for AFB
- 4- Lymph node biopsy
- 5- Ultrasound scan of abdomen

Answer & Comments

Answer: 4- Lymph node biopsy



The most likely diagnosis in a patient who has cervical lymphadenopathy and B symptoms is lymphoma.



[ Q: 974 ] MRCPass - Haematology

A 31 year old white woman has recurrent episodes of epistaxis. Physical examination revealed telangiectasias on her forehead and buccal surface of the oral mucosa.

*What is the likely diagnosis?*

- 1- Wegener's granulomatosis
- 2- Goodpasture's syndrome
- 3- Osler Rendu Weber syndrome
- 4- Haemophilia A
- 5- Von Willebrand's disease

Answer & Comments

Answer: 3- Osler Rendu Weber syndrome

The diagnosis is hereditary haemorrhagic telangiectasia (Osler Rendu Weber syndrome). Multiple telangiectasia are usually seen on the hands and around the mouth. Arteriovenous malformations are associated (pulmonary or cranial).



[ Q: 975 ] MRCPass - Haematology

A 50 year old man has bronze pigmentation. He has a family history of liver problems. Clinical examination reveals hepatomegaly. His investigations show :

Hb 14.0 g/dl  
MCV 90 fl  
MCHC 30 g/dl (32-35)  
WCC  $8 \times 10^9/L$   
platelets  $180 \times 10^9/L$   
PT 17s (11.5-15.5)  
APTT 35s (24-38)  
urea 5  $\mu\text{mol/l}$

creatinine 80  $\mu\text{mol/l}$   
sodium 140 mmol/l  
potassium 3.6 mmol/l  
bilirubin 26  $\mu\text{mol/l}$   
AST 70 U/l  
ALP 140 U/l  
albumin 32 g/l  
iron 50  $\mu\text{mol/l}$  (14-29)  
ferritin 650  $\mu\text{g/l}$  (15-200)  
transferrin saturation 80%

*Which of the following is the likely diagnosis?*

- 1- Alcoholic liver disease
- 2- Haemochromatosis
- 3- Addison's disease
- 4- Chronic hepatitis C
- 5- Porphyrria

Answer & Comments

Answer: 2- Haemochromatosis

There is high iron and ferritin. Transferrin saturation of >50% is high. This is likely to be haemochromatosis, which is autosomal recessive. Venesection can help reduce ferritin levels (aiming for 50  $\mu\text{g/l}$ ).



[ Q: 976 ] MRCPass - Haematology

A 30 year old man has had 2 episodes of haemetemesis following consumption of several pints of beer.

Investigations reveal: Hb 6 g/dl, WCC  $1.7 \times 10^9/L$ , platelets  $4 \times 10^9/L$ , PT 19s, APTT 52s, fibrinogen 0.3 g/l (2-5), fibrin degradation products 120  $\mu\text{g/ml}$  (<10).

Blood film reveals predominantly blast cells containing Auer Rods.

*Which of the following is the most likely diagnosis?*

- 1- Aplastic anaemia

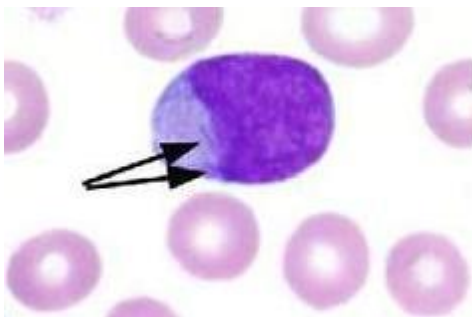


- 2- Disseminated intravascular coagulation
- 3- Immune thrombocytopenic purpura
- 4- Acute promyelocytic leukaemia
- 5- Acute lymphoblastic leukaemia

#### Answer & Comments

**Answer:** 4- Acute promyelocytic leukaemia

Acute myeloid leukaemia is defined as 20% or more myeloblasts in the bone marrow. Acute promyelocytic leukaemia (M3) is characterized by presence of promyelocytes. There is an association with the cytogenetic translocation t(15:17).



Auer rods are elongated, bluish-red rods composed of fused lysosomal granules, seen in the cytoplasm of myeloblasts.



#### [ Q: 977 ] MRCPass - Haematology

A 62 year old woman had successful knee surgery. A week following surgery, she had a DVT despite prophylactic doses of low molecular weight heparin.

Her blood tests showed: INR 1.1, APPT 37 s, Fibrinogen 4.6 g/l, Hb 12.8 g/dl, platelets  $18 \times 10^9/L$ , WCC  $22 \times 10^9/L$ . Blood film showed anisocytosis.

*What is the likely diagnosis?*

- 1- Idiopathic thrombocytopenic purpura
- 2- Disseminated intravascular coagulation
- 3- Thrombotic thrombocytopenic purpura
- 4- Heparin-induced thrombocytopenia and thrombosis

- 5- Haemolytic uraemic syndrome

#### Answer & Comments

**Answer:** 4- Heparin-induced thrombocytopenia and thrombosis

The timing of events, about 7 days after commencing heparin suggests an immune-mediated phenomenon. Despite thrombocytopenia the patient is predisposed to thrombosis. Platelet aggregation results in thromboembolic events. The normal fibrinogen suggests DIC is unlikely.



#### [ Q: 978 ] MRCPass - Haematology

A 35 year old lady has had treatment with penicillamine for rheumatoid arthritis. She presents with weakness and pallor claiming that it may be a side effect of the drug.

Her Hb is 5 g/dl, WCC is  $2 \times 10^9/L$ , platelet count is  $15 \times 10^9/L$ , INR is 1.0 and APTT is 27 s.

*Which of the following is the most likely diagnosis?*

- 1- Acute myeloid leukaemia
- 2- Myelodysplasia
- 3- Aplastic anaemia
- 4- Folate deficiency
- 5- B12 deficiency

#### Answer & Comments

**Answer:** 3- Aplastic anaemia

There is pancytopenia due to bone marrow failure. Aplastic anaemia can be congenital (Fanconi's anaemia) or acquired due to drugs (benzene compounds, insecticides, gold or penicillamine).

Treatment is with antilymphocyte globulin, cyclosporin or methylprednisolone.



#### [ Q: 979 ] MRCPass - Haematology

An 8 year old boy is being investigated for short stature.

Examination revealed 2 café au lait spots. Blood tests showed: Hb 9 g/dl, WCC  $2.5 \times 10^9/L$ , platelets  $28 \times 10^9/L$ .

*What is the likely cause of anaemia?*

- 1- Iron deficiency
- 2- Acute lymphoblastic leukaemia
- 3- Fanconi's anaemia
- 4- Folate deficiency
- 5- Multiple myeloma

#### Answer & Comments

**Answer:** 3- Fanconi's anaemia

Fanconi's anaemia often presents at age < 10 with growth retardation, renal defects and café au lait spots. Inheritance is autosomal recessive. 10% of patients may develop acute myeloid leukaemia with time.



[ Q: 980 ] MRCPass - Haematology

A 35 year old woman presents with jaundice and lethargy.

Her investigations reveal:

Haemoglobin 8.0 g/dL

reticulocyte count  $150 \times 10^9/L$  (25-85)

serum bilirubin 75 umol/L

Her blood film reveals presence of spherocytes

*Which of the following is the next useful investigation?*

- 1- Endoscopy
- 2- Glucose 6phosphate dehydrogenase activity
- 3- Direct antiglobulin test
- 4- Red cell osmotic fragility
- 5- Haemoglobin electrophoresis

#### Answer & Comments

**Answer:** 3- Direct antiglobulin test

The direct antiglobulin test (DAT) is used to detect IgG or C3 bound to the surface of the red cell. In patients with hemolysis, the DAT is useful in determining whether there is an immune etiology.

Non-immune causes of hemolysis such as DIC, thrombotic thrombocytopenic purpura, mechanical hemolysis such as those due to artificial valves or burns, hemoglobinopathies (sickle cell, thalassemia), red cell enzyme deficiencies (G6PDP, pyruvate kinase), and red cell membrane defects (hereditary spherocytosis, PNH) will have a negative DAT.

Immune causes of hemolysis including autoimmune hemolytic anemias, drug induced hemolysis, and delayed or acute hemolytic transfusion reactions are characterized by a positive DAT.



[ Q: 981 ] MRCPass - Haematology

A 40 year old man has had a bowel operation. 48 hours later he becomes febrile, hypotensive and unwell. His investigations show :

Hb 12.6g/dl

WBC  $17.4 \times 10^9/L$

plt's  $45 \times 10^9/L$

D-dimer 16,000 (<500) ng/dl

Fibrinogen 82 (180-363) mg/dl

Haptoglobin 6 (16-200) mg/dl

INR 2.4 (1)

APTT 50 (<34)

*What is the most likely cause of the thrombocytopenia?*

- 1- Immune thrombocytopenia
- 2- Disseminated intravascular coagulation
- 3- Heparin induced thrombocytopenia
- 4- Thrombotic thrombocytopenic purpura

## 5- Aplastic anaemia

## Answer &amp; Comments

Answer: 2- Disseminated intravascular coagulation

Disseminated intravascular coagulation is caused by inappropriate and excessive activation of the haemostatic systems. 60% are caused by Gram negative sepsis.

Other causes include viral infections, metastatic carcinoma, leukaemia, obstetric causes, extensive trauma and burns.

APTT, PT (INR) and TT are all prolonged, platelets and fibrinogen are low, D-dimers/FDPs are elevated. Other presenting laboratory abnormalities include uremia, elevated creatinine, elevated lactate dehydrogenase, decreased haptoglobin, bilirubinemia and lactic acidosis. Schistocytes usually are evident on peripheral smear. Treatment is of underlying causes and by control of the haemorrhagic state. Platelets, blood, cryoprecipitate and fresh frozen plasma may all be required.



## [ Q: 982 ] MRCPass - Haematology

A 30 year old man presents with painless enlargement of his cervical lymph nodes. He also complains of fever and night sweats. He has lost 1 stone in weight over the past 3 months. Chest x ray shows mediastinal widening.

A lymph node biopsy is performed and this reveals a background of lymphocytes, plasma cells, histiocytes, eosinophils, neutrophils and fibroblasts. Scattered within this background infiltrate are a number of large cells with two large nuclei with prominent nucleoli.

*The diagnosis is:*

- 1- Tuberculosis
- 2- ALL
- 3- Hodgkin's lymphoma

## 4- Non Hodgkin's lymphoma

## 5- CLL

## Answer &amp; Comments

Answer: 3- Hodgkin's lymphoma

The clinical features are suggestive in Hodgkin's disease and histology demonstrates Reed-Sternberg cells, which are pathognomonic. Reed-Sternberg cells are characteristic bi-nucleate or multinucleate cells found in Hodgkin's disease (owl's eye nuclei or church plate nuclei).

Staging is via the Modified Ann Arbor classification:

I - Involvement of a single lymph node region or a single extralymphatic site or organ.

II - Involvement of two or more lymph node regions on the same side of the diaphragm (II) or one or more lymph node regions plus an extralymphatic site (IIE).

III - Involvement of lymph nodes on both sides of the diaphragm.

IV - Involvement of one or more extralymphatic organs (Lung, liver, bone marrow, with or without lymph node involvement).



Chest x ray showing mediastinal widening due to lymphadenopathy in Hodgkin's lymphoma



## [ Q: 983 ] MRCPass - Haematology

A 12 year old boy has recently been found to be anaemic and is undergoing investigations.

He is short and has an abnormal facies with frontal and parietal bossing, enlargement of the malar (maxillary) bones and protruding teeth.

On examination of the abdomen he has hepatosplenomegaly. Investigations are as follows: Hb 7.5 g/dl MCV 65 fl  
Plt 160 x 10<sup>9</sup>/L

*Which of the following is likely to treat the anaemia?*

- 1- Ascorbic acid
- 2- Ferrous sulphate
- 3- Vitamin B<sub>12</sub>
- 4- Folic acid
- 5- Blood transfusion

#### Answer & Comments

Answer: 4- Folic acid

The history of chronic anaemia and the examination features suggest a chronic haemolytic anaemia with extramedullary erythropoiesis. This suggests the diagnosis of thalassaemia. In thalassaemia, folic acid supplementation is useful in treatment of anaemia as there is increased metabolic demand for folic acid.



#### [ Q: 984 ] MRCPass - Haematology

A 30 year old woman is bleeding a lot after a thyroidectomy.

Investigations show :

Hb 11.3 g/dl

WBC 5.2 x 10<sup>9</sup>/L

Plts 230 x 10<sup>9</sup>/L

PT 15 sec (13-16 sec)

APTT 86 sec (28-38 sec)

APTT 50:50 mix with normal plasma 37 sec

*Which of the following is the most likely diagnosis?*

- 1- Factor V deficiency
- 2- Anti-phospholipid syndrome
- 3- Factor VII deficiency
- 4- Factor XII deficiency
- 5- Von Willebrand's disease

#### Answer & Comments

Answer: 5- Von Willebrand's disease

An isolated prolonged APTT will be caused by deficiencies in factors VIII, IX, XI and XII and by von Willebrand's disease.

Anti-phospholipid syndrome can cause a prolonged APTT but is not associated with bleeding and the APTT is not corrected with normal plasma. Factor X and V deficiency are associated with both a prolonged PT and APTT.

Factor VII deficiency is associated with a prolonged PT.



#### [ Q: 985 ] MRCPass - Haematology

A 60 year old man presents with back pains, abdominal pains and polyuria.

He has a Hb of 12 g/dl, WCC of 8 x 10<sup>9</sup>/L, plt of 300 x 10<sup>9</sup>/L.

Serum calcium is 2.9 (2.25-2.7) mmol/l and phosphate 1.2 (0.8-8) mmol/l.

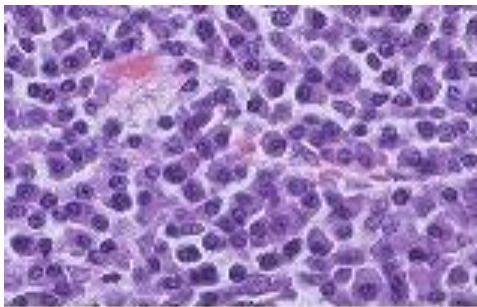
*What might the bone marrow examination show?*

- 1- Increased blast cells
- 2- Increased proportion of plasma cells
- 3- Increased promyelocytes
- 4- Increased infiltration of lymphatic cells
- 5- Increased fibrosis

## Answer &amp; Comments

**Answer:** 2- Increased proportion of plasma cells

The diagnosis is multiple myeloma, and the bone marrow shows increased amounts of plasma cells (>30%) as seen in the image below.



## [ Q: 986 ] MRCPass - Haematology

A 55 year old man has acute onset confusion, headache, nausea and vomiting and visual disturbance. He had been prescribed NSAIDs and antibiotics for knee arthritis.

On examination he was overweight, he looked plethoric, and cyanosed. There was 3 fingerbreadths hepatomegaly and the spleen was enlarged about 5 fingerbreadths.

Investigations show :

Hb 21.2 g/dl	MCV 71 fl
WBC $18 \times 10^9/L$	Na 135 mmol/l
K 3.8 mmol/l	Urea 6.2 mmol/l
Creatinine 88 micromoles/l	
Chloride 105 mmol/l	
Bicarbonate 32 mmol/l	
Calcium 2.5	
Albumin 36 g/l	
Phosphate 0.9 mmol/l	
ESR 15 mm/1st hour	

**What is the best management?**

- 1- Hyperbaric oxygen
- 2- Splenectomy

- 3- Prednisolone
- 4- Broad spectrum antibiotics
- 5- Venesection

## Answer &amp; Comments

**Answer:** 5- Venesection

The diagnosis is polycythaemia rubra vera. Increased serum viscosity may arise from hyperglobulinaemia or from an increased red cell mass, polycythaemia. As a guideline, erythrocytosis should be suspected in men with a haemoglobin concentration greater than 18.0 g /L or in women with values greater than 17.0 g /L. Treatment of hyperviscosity syndrome should be with fluid replacement and venesection.

The cause of cyanosis is due to small vessel insufficiency and thrombosis, which will improve with venesection.

Hydroxyurea and anagrelide are chemotherapeutic agents which can also be considered.



## [ Q: 987 ] MRCPass - Haematology

A 35 year old man has diabetes. On examination he also has a slate grey discolouration around his forearm. He has a Hb of 13.5 g/dl, platelet count  $350 \times 10^9/L$ , AST of 35 U/l, ALP is 120 U/l, Albumin 35 g/l, ferritin is 500 µg/l.

**Which of the following tests is most helpful?**

- 1- Copper and caeruloplasmin
- 2- Transferrin saturation
- 3- Fasting glucose
- 4- 72 hour fast
- 5- Short synacthen test

## Answer &amp; Comments

**Answer:** 2- Transferrin saturation



The likely diagnosis is haemochromatosis due to the diabetes, pigmentation, and raised ferritin. Transferrin saturation would be raised in haemochromatosis.



[ Q: 988 ] MRCPass - Haematology

A 72 year old woman presents with malaise, headaches and weakness in her arms and legs. Clinical examination reveals lymphadenopathy and hepatosplenomegaly. Nerve conduction tests show a sensory neuropathy.

Her blood tests reveal Hb of 7.9g/dl, MCV 95 fl, WCC  $9 \times 10^9/L$ . Her ESR is 80 and IgM paraprotein of 18 g/l (0-5).

*Which is the most likely diagnosis?*

- 1- Multiple myeloma
- 2- CML
- 3- CLL
- 4- Waldenstrom's macroglobulinaemia
- 5- AML

Answer & Comments

Answer: 4- Waldenstrom's macroglobulinaemia

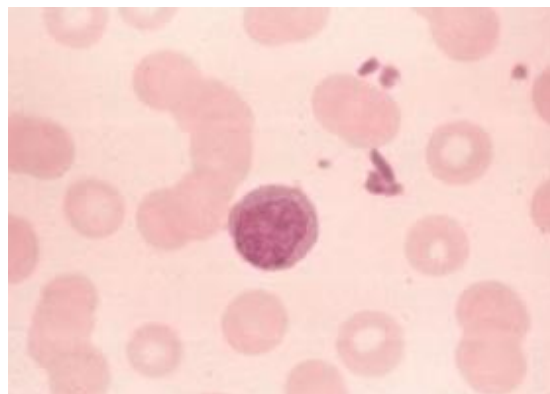
In Waldenstrom's macroglobulinaemia, increased serum proteins leads to a variety of symptoms:

Neuropathy

Headache and focal nervous system impairment

congestive cardiac failure.

Diagnosis is confirmed by high Ig M paraprotein levels (also known as a spike).



A plasma cell on the blood film in Waldenstrom's



[ Q: 989 ] MRCPass - Haematology

A 60 year old woman undergoes a colostomy, which is complicated by a post-operative haemorrhage.

Following transfusion of 4 units of blood, her haemoglobin is 12. g/dl.

A week later, she has the following results:

Hb 7.7 g/dl WBC  $6.6 \times 10^9/L$

Plts  $377 \times 10^9/L$  MCV 96 fl

Bilirubin 66  $\mu\text{mol/l}$

Direct Coombs test positive

*What is the most likely diagnosis?*

- 1- Further post-operative bleed
- 2- Subacute endocarditis
- 3- Delayed haemolytic transfusion reaction
- 4- Acute haemolytic transfusion reaction
- 5- Autoimmune haemolytic anaemia

Answer & Comments

Answer: 3- Delayed haemolytic transfusion reaction

The most likely diagnosis is a delayed haemolytic transfusion reaction. These are due to incompatibilities in red cell antigens other than the ABO groups. The antibodies are acquired rather than naturally occurring so they occur in patients who have been pregnant in the past or who have had blood



transfusions. When stimulated by transfusion, antibody levels increase over 7-10 days to cause a delayed haemolytic transfusion reaction.



[ Q: 990 ] MRCPass - Haematology

A 65 year old lady presents with malaise and weight loss, having been referred by the GP for investigation of anaemia. His investigations show :

Hb 8.0 g/dl                      MCV 105 fl  
MCHC 33 g/dl (32-35)      WCC 11 x 10<sup>9</sup>/L  
platelets 130 x 10<sup>9</sup>/L      urea 6 µmol/l  
creatinine 90 µmol/l      sodium 140 mmol/l  
potassium 4 mmol/l      bilirubin 18 µmol/l  
AST 28 U/l                      ALP 180 U/l  
iron 50 µmol/l (14-29)  
ferritin 550 µg/l (15-200)

Bone marrow aspirate shows increased haemosiderin, normoblastic hyperplasia and ringed red blood cells

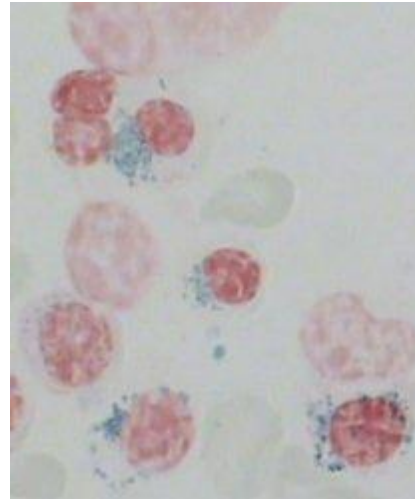
*Which of the following is likely?*

- 1- Acute myeloid leukaemia
- 2- Plasmacytoma
- 3- Chronic myeloid leukaemia
- 4- Sideroblastic anaemia
- 5- Chronic lymphoblastic leukaemia

Answer & Comments

Answer: 4- Sideroblastic anaemia

In sideroblastic anaemia, there is increased bone marrow iron. This is reflected in the increased iron stores in ferritin and also haemosiderin and ringed premature red blood cells (sideroblasts) due to excess iron. Sideroblastic anaemia occurs due to an enzyme deficiency (?ALA synthase 2 deficiency), alcohol, drugs (anti TB), myelodysplasia.



Ringed sideroblasts in a case of myelodysplasia



[ Q: 991 ] MRCPass - Haematology

A 30 year old woman was sent to the hospital for investigation following a upper respiratory tract infection which was slow to resolve. The following results were seen: Hb 11.5 g/dl, MCV 79 fl, platelets 650 x 10<sup>9</sup>/L, WCC 10 x 10<sup>9</sup>/L, normal PT and APTT.

*What is the likely cause of the thrombocytosis?*

- 1- Polycythaemia rubra vera
- 2- Sideroblastic anaemia
- 3- Reactive thrombocytosis
- 4- Myelodysplasia
- 5- Idiopathic thrombocytopenic purpura

Answer & Comments

Answer: 3- Reactive thrombocytosis

Reactive thrombocytosis may be due to haemorrhage, iron deficiency, malignancy, infection and connective tissue diseases.



[ Q: 992 ] MRCPass - Haematology

A 75 year old patient has been unwell. Her blood tests show :

Hb 7.0 g/dl

MCV 110 fl

WCC  $4 \times 10^9/L$

platelets  $70 \times 10^9/L$

urea  $5 \mu\text{mol/l}$

creatinine  $110 \mu\text{mol/l}$

sodium  $140 \text{ mmol/l}$

potassium  $4 \text{ mmol/l}$

The blood film shows ring sideroblasts with 15% blast cells.

Bone marrow show hypercellularity

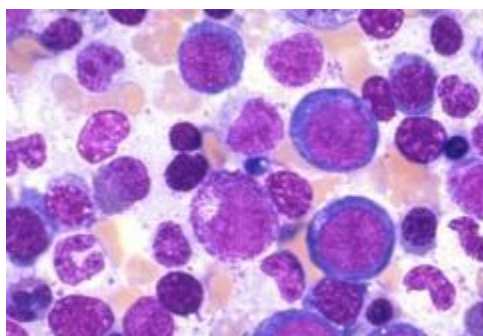
*Which is the most likely diagnosis?*

- 1- Acute myeloid leukaemia
- 2- Chronic myeloid leukaemia
- 3- Myelodysplastic syndrome
- 4- Chronic lymphatic leukaemia
- 5- Non hodgkin's lymphoma

#### Answer & Comments

Answer: 3- Myelodysplastic syndrome

Myelodysplastic syndromes are associated with pancytopenias along with dyserythropoietic ringed sideroblasts and blast cells in the peripheral circulation. Sideroblasts would be unlikely in AML and CML, although blast cells could be seen. If the bone marrow was hypocellular, then aplastic anaemia would be possible in this question.



Bone Marrow biopsy in myelodysplasia showing hypercellularity and abnormal megakaryocytes



[ Q: 993 ] MRCPass - Haematology

A 45 year old intravenous drug user is treated with unfractionated heparin for a DVT as he is being assessed for endocarditis. Two months previously, he had received heparin. After 3 days of treatment, his platelet count has fallen from a baseline of  $180 \times 10^9/L$  to  $120 \times 10^9/L$ . Upon enquiry to the GP, he had previously had blood tests which showed a normal platelet count and he had no history of bleeding problems.

*Which of these statements is true?*

- 1- Deep vein thrombosis
- 2- Type I HIT
- 3- Essential thrombocytopenia
- 4- Idiopathic thrombocytopenic purpura
- 5- Henoch Schönlein Purpura

#### Answer & Comments

Answer: 2- Type I HIT

The most likely diagnosis is heparin induced thrombocytopenia, in view of the previous normal platelet counts and recent use of heparin. Although the patient becomes mildly thrombocytopenic, therapy can continue as it is likely to remain mild. In Type II HIT, antibodies would be more readily detectable by ELISA and the thrombocytopenia would be more severe.



[ Q: 994 ] MRCPass - Haematology

A 30 year old woman attends A&E with marked breathlessness. Subsequently, a pulmonary embolism is confirmed by V/Q scan.

Blood tests reveal the following results:

PT 11/11 s

APTT 67/31 s (50:50 mix test:normal plasma 55s)

TT 19/18 s

Hb 10.2 g/dl

WCC  $1.8 \times 10^9/L$

Plats  $90 \times 10^9/L$

*Which one of the following investigations is most appropriate?*

- 1- Antiphospholipid antibody
- 2- Bone marrow examination
- 3- Clotting factor levels
- 4- Testing for lupus anticoagulant
- 5- Thrombophilia screening

#### Answer & Comments

Answer: 1- Antiphospholipid antibody

The lupus anticoagulant is a form of antiphospholipid antibody, and this is likely to be present as there is prolonged APTT. The name was given to the antibody because it was first found in patients with lupus. The presence of this is likely to have predisposed the patient to a pulmonary embolus. Although thrombophilia testing is indicated it is best left until after the initial period of anticoagulation.



#### [ Q: 995 ] MRCPass - Haematology

A 35 year old woman was admitted with breathlessness. On admission she looked cyanotic and was given high flow oxygen immediately. Arterial blood gas analysis revealed a pH of 7.40,  $pO_2$  of 11 kPa,  $pCO_2$  of 4 and oxygen saturation of 50% by co-oximeter.

*What treatment should be given?*

- 1- N acetyl cysteine
- 2- Haemodialysis
- 3- Methylene blue
- 4- Oral activated charcoal
- 5- Ascorbic acid

#### Answer & Comments

Answer: 3- Methylene blue

Methaemoglobinaemia occurs when haemoglobin is oxidised and is unable to carry oxygen.

Drugs which can cause this condition include:

antibiotics (dapsone, sulphonamides and trimethoprim)

nitrites and nitrates

local anaesthetics (lignocaine and prilocaine).

Pulse oximeters measure both oxyHb and metHb, therefore giving false reassurance in patients with high levels of metHb. Methylene blue is used in those with severe poisoning or MetHb levels greater than 30%; excessive doses of methylene blue can themselves cause methaemoglobinaemia. Dapsone poisoning can be treated by activated charcoal, which adsorbs it.



#### [ Q: 996 ] MRCPass - Haematology

A 38 year old woman presents to the hospital with a history of headaches, decreased consciousness and fevers. Her blood results show :

Hb 10.5 g/dl

WBC  $14 \times 10^9/L$

Plts  $14 \times 10^9/L$

Clotting screen normal

urea  $15 \mu\text{mol/l}$

creatinine  $210 \mu\text{mol/l}$

*What is the most likely diagnosis?*

- 1- Acute lymphoblastic leukaemia
- 2- Thrombotic thrombocytopenic purpura
- 3- Disseminated intravascular coagulation
- 4- Chronic myeloid leukaemia
- 5- Acute myeloid leukaemia

#### Answer & Comments

Answer: 2- Thrombotic thrombocytopenic purpura

The classic 5 features associated with TTP are:

fever

thrombocytopenia

microangiopathic haemolytic anaemia

renal failure

neurological symptoms



[ Q: 997 ] MRCPass - Haematology

A 35 year old man presents with a 10 day history of lethargy. He has a maculo-papular rash and a 1 cm sized palpable cervical lymph node. Investigations show :

Hb 13.6 g/dl

WBC  $13.2 \times 10^9/L$

Plts  $280 \times 10^9/L$

Blood film shows reactive lymphocytes

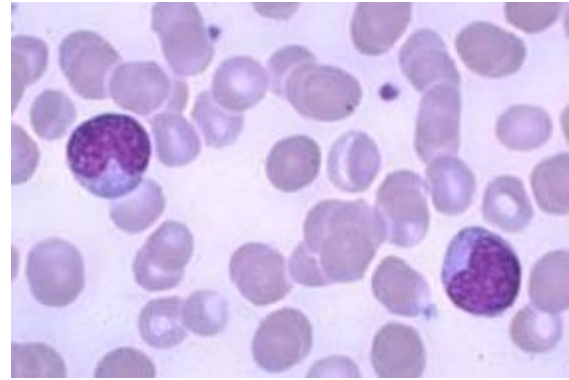
*What is the most likely diagnosis?*

- 1- Tuberculosis
- 2- SLE
- 3- Infectious mononucleosis
- 4- Acute myeloblastic leukaemia
- 5- Non-Hodgkin's disease

Answer & Comments

Answer: 3- Infectious mononucleosis

Common causes of a reactive lymphocytosis include infectious mononucleosis (EBV infection), CMV infection and toxoplasma infection.



Reactive Lymphocytes



[ Q: 998 ] MRCPass - Haematology

A 40 year old man presents with fatigue, weakness, and shortness of breath with exertion over the past few days.

On examination, he is pale and jaundiced. His heart rate is 110 and blood pressure is 110/65 mmHg. His breath sounds were clear, there is a soft flow murmur audible in the aortic area.

Blood results show :

Hb 6.5 g/dl

MCV 105 fl

WCC  $6.2 \times 10^9/L$

platelets  $250 \times 10^9/L$

Reticulocyte count 14% (0.5% to 1.5%)

AST 27 (1-31) U/l

ALP 78 (20-120) U/l

Bilirubin 65 (1-22)  $\mu\text{mol/l}$

lactate dehydrogenase 410 (105-333) U/L

The blood film shows spherocytes.

*Which test should be performed next?*

- 1- Direct Coomb's test
- 2- Osmotic fragility
- 3- HAM's test
- 4- Bone marrow aspirate
- 5- Haemoglobin electrophoresis

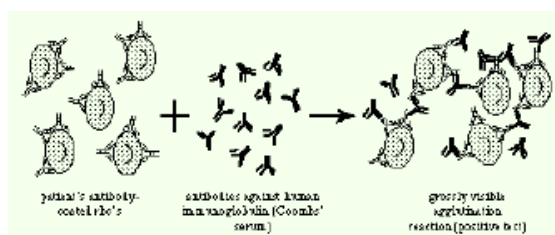
Answer & Comments

Answer: 1- Direct Coomb's test

The diagnosis is autoimmune haemolytic anaemia. In haemolytic anaemia, the bilirubin and LDH are raised, there is a reticulocytosis, and blood film shows spherocytes. Autoimmune haemolytic anaemia is associated with viral infections, drugs, lymphoproliferative diseases and autoimmune diseases.

The direct Coomb's test (DAT) is used to detect IgG or C3 bound to the surface of the red cell. In patients with hemolysis, the DAT is useful in determining whether there is an immune etiology. Immune causes of hemolysis, including autoimmune hemolytic anemias, drug induced hemolysis, and delayed or acute hemolytic transfusion reactions, are characterized by a positive DAT. If the DAT test is negative, then hereditary spherocytosis should be considered.

Autoimmune haemolytic anaemia can be due to warm or cold reacting antibodies, depending on the cause of the autoimmune reaction. Warm antibodies tend to be IgG and lead to splenic destruction of red blood cells, forming spherocytes. Cold antibodies are usually IgM antibodies. They cause intravascular haemolysis.



Coomb's test



## [ Q: 999 ] MRCPass - Endocrinology

A 22 year old student is diagnosed with Grave's disease. She enquires about the long term complications of radioactive iodine, which is being considered.

*What side effect is most likely?*

- 1- Hyperthyroidism
- 2- Hypoparathyroidism
- 3- Hypothyroidism
- 4- Thyroid malignancy
- 5- Recurrent laryngeal nerve damage

## Answer &amp; Comments

Answer: 3- Hypothyroidism

Radioactive iodine generally has few side effects, is permanent, and very effective. It cannot be used during pregnancy due to risks of teratogenicity. It can often be performed as an outpatient or with a short hospital stay. The long-term risk is hypothyroidism, because thyroid function is reduced so effectively that thyroid replacement may be required.



## [ Q: 1000 ] MRCPass - Endocrinology

A 40 year old man has a blood pressure of 170/110 mmHg.

Laboratory findings include:

- sodium 147 mmol/L (135-145)
- potassium 2.6 mmol/L (3.5-5.0)
- chloride 101 mmol/L (95-105)
- glucose 5 mmol/L (3.5-5.5)
- creatinine 90 umol/L (70-110)

His plasma renin activity is 0.15 ng/mL/hr and his serum aldosterone 800 pmol/L (100-500).

*Which drug is recommended for hypertension?*

- 1- Ramipril
- 2- Atenolol
- 3- Spironolactone

4- Doxazosin

5- Bendrofluazide

## Answer &amp; Comments

Answer: 3- Spironolactone

The diagnosis is primary hyperaldosteronism (Conn's syndrome). Spironolactone 200-400 mg is recommended as first line, but ACE-inhibitors can also be used.

Surgical treatment (removal of an adenoma) is definitive.



## [ Q: 1001 ] MRCPass - Endocrinology

A 22 year old man who has been taking a drug has now developed hirsutism.

*Which one of the following drugs is most likely to be the cause?*

- 1- Prednisolone
- 2- Minoxidil
- 3- Amphetamine
- 4- Propanolol
- 5- Acetylsalicylic acid

## Answer &amp; Comments

Answer: 2- Minoxidil

Causes of hirsutism include:

- cyclosporin A
- Risperidone
- Minoxidil
- Phenytoin
- Ovarian tumours
- Polycystic Ovary syndrome
- Congenital adrenal hyperplasia



## [ Q: 1002 ] MRCPass - Endocrinology

A 60 year old woman presents with



anorexia, nausea vomiting and weight loss. On examination she was dehydrated and looked unwell.

Investigations reveal:

Hb 15 g/dl

WBC  $5.7 \times 10^9/L$

ESR 40

Sodium 138 mmol/l

Potassium 3.7 mmol/l

Chloride 112 mmol/l

Bicarbonate 25 mmol/l

Urea 19.3 mmol/l

Creatinine 260 micromoles/l

Albumin 42 g/l

Calcium 3.3 mmol/l

Phosphate 0.60 mmol/l

*Which of the following is the most likely cause?*

- 1- Vitamin D toxicity
- 2- Pseudopseudohypoparathyroidism
- 3- Congenital adrenal hyperplasia
- 4- Osteoporosis
- 5- Paget's disease

#### Answer & Comments

**Answer:** 1- Vitamin D toxicity

This patient has probably been overtreated with vitamin D. Severe hypercalcaemia (Serum calcium  $> 3$  mmol/l) may be associated with malignant disease, hyperparathyroidism, renal failure and vitamin D therapy.



[ Q: 1003 ] MRCPass - Endocrinology

A 50 year old woman presents with Cushingoid facies and hyperpigmentation of the skin on her face. She smoked 20 cigarettes per year for 20 years. Her chest X ray reveals a 3 cm mass in the right upper lobe. A CT guided needle biopsy of the lung lesion is performed.

*Which is the likely cytologic finding?*

- 1- Squamous cell carcinoma
- 2- Small cell (oat cell) carcinoma
- 3- Large cell carcinoma
- 4- Adenocarcinoma
- 5- Teratoma

#### Answer & Comments

**Answer:** 2- Small cell (oat cell) carcinoma

The pigmentation and cushingoid features are typical features of ectopic ACTH secretion. This is most commonly due to small cell carcinoma, but may be associated with a carcinoid tumour.



[ Q: 1004 ] MRCPass - Endocrinology

A 38 year old lady has fasting blood glucose of 6.8 mmol/L.

*What is the next investigation of choice?*

- 1- Random glucose
- 2- C peptide level
- 3- Insulin level
- 4- Oral glucose tolerance test
- 5- Insulin tolerance test

#### Answer & Comments

**Answer:** 4- Oral glucose tolerance test

In the oral glucose tolerance test the patient, after fasting for 15 hours, drinks 75 g of glucose in 300 ml of water, over 5 minutes. Blood glucose is measured before the drink and after 30, 60, 90 and 120 minutes. There is a normal glucose tolerance if the venous plasma value is less than 7 mmol/l after the 2 hour period. If after 2 hours after the glucose load the value is between 7 and 11 mmol/l, then there is impaired glucose tolerance. If glucose is greater than or equal to 11.1 mmol/l, then there is diabetes mellitus.



## [ Q: 1005 ] MRCPass - Endocrinology

A 30 year old lady has recurrent attacks of dizziness and blackouts. A 72 hour fast reveals periods where her plasma glucose is 2.5 mmol/l with elevated insulin and C peptide levels.

*Which is the next best investigation?*

- 1- Repeat 72 hour fast
- 2- Glucagon stimulation test
- 3- Glucose tolerance test
- 4- MRI of abdomen
- 5- Insulin antibodies

## Answer &amp; Comments

Answer: 4- MRI of abdomen

The tests so far suggest an insulinoma. Localisation of the insulinoma can be done with MRI, CT, superior mesenteric angiography or pancreatic venous catheterisation.



Insulinoma



## [ Q: 1006 ] MRCPass - Endocrinology

A 25 year old lady has mature onset diabetes of the young (MODY). Her blood sugars have been well controlled with gliclazide 80mg bd. Her obstetrician refers her to the physician for shared management of diabetes.

*Which is the best management step?*

- 1- Increase gliclazide doses to 160 mg bd

- 2- Convert gliclazide to actrapid and insulatard insulin injections
- 3- Convert gliclazide to metformin
- 4- Leave gliclazide doses unchanged
- 5- Stop gliclazide and monitor blood glucose

## Answer &amp; Comments

Answer: 2- Convert gliclazide to actrapid and insulatard insulin injections

Gliclazide can cross the placenta and cause fetal hypoglycaemia. In order to avoid macrosomia and congenital disorders, glycaemic control is best achieved with insulin therapy during pregnancy. A tds actrapid (short acting) regime with night insulatard (long acting) will achieve best glycaemic control.



## [ Q: 1007 ] MRCPass - Endocrinology

A 45 year old man with type 2 diabetes attends the clinic. His HbA1c is 10.5%.

*What average plasma glucose concentration is this HbA1c value equivalent to?*

- 1- 7 mmol/l
- 2- 10 mmol/l
- 3- 12.5 mmol/l
- 4- 16 mmol/l
- 5- 20 mmol/l

## Answer &amp; Comments

Answer: 4- 16 mmol/l

A HbA1c of 7% would translate into an average glucose concentration of 9.5 mmol/l, and a HbA1c of 10% into 15.5 mmol/l.



## [ Q: 1008 ] MRCPass - Endocrinology

A 46 year old lady has been gaining weight over the past year. She also has features of hirsutism and abdominal striae.

On examination, she was found to have proximal myopathy.

*What test should be done?*

- 1- Short synacthen test
- 2- Random cortisol level
- 3- Low dose dexamethasone suppression test
- 4- Insulin tolerance test
- 5- Oral glucose tolerance test

#### Answer & Comments

**Answer:** 3- Low dose dexamethasone suppression test

This lady is likely to have Cushing's syndrome. A random cortisol is not that helpful - a 24 hour urine free cortisol collection should be done, and also a low dose dexamethasone suppression test (over 2 days) will confirm the diagnosis if there is failure of cortisol suppression.



[ Q: 1009 ] MRCPass - Endocrinology

A 55 year old woman with Cushing's syndrome presents with left sided hip pain acutely.

*Which one of the following is most likely to have occurred?*

- 1- Hip dislocation
- 2- Neuropathy
- 3- Necrosis of femoral head
- 4- Metastatic lesion
- 5- Iliac crest fracture

#### Answer & Comments

**Answer:** 3- Necrosis of femoral head

Cushing's Syndrome can present with necrosis of femoral head due to osteoporosis. Necrosis of the femoral head can also be caused by avascular causes such as sickle cell disease, diabetes, SLE and scleroderma.



Necrosis of the femoral head



[ Q: 1010 ] MRCPass - Endocrinology

A 22 year old man presents with worsening lethargy over the past several years. He also mentions long standing polyuria and nausea.

Examination reveals that he has a BMI of 22 kg/m<sup>2</sup> and a blood pressure of 110/60 mmHg.

Examination of the cardiovascular and abdominal systems are unremarkable. Investigations reveal:

sodium 139 mmol/l

potassium 2.8 mmol/l

urea 6.6 mmol/l

creatinine 97 µmol/l.

ABGs showed pH of 7.5, normal pO<sub>2</sub>, bicarbonate of 32 mmol/l (21 - 28).

Further investigation showed :

aldosterone 1195 pmol/l (111 - 863) - ambulatory

renin 92 ng/ml/hr (7 - 76)

*What is the likely diagnosis?*

- 1- Type IV renal tubular acidosis
- 2- Conn's syndrome
- 3- Bartter's syndrome
- 4- Cushing's syndrome
- 5- Hypokalaemic periodic paralysis

## Answer &amp; Comments

**Answer:** 3- Bartter's syndrome

Bartter's syndrome is an autosomal recessive renal disorder. There is a Na-K-2Cl cotransporter gene defect.

Presentation is often in childhood with gastrointestinal upset and polyuria. There is associated hypokalaemic metabolic alkalosis, elevated renin and aldosterone levels. High urine chloride levels can be detected. Vomiting, constipation, polyuria and polydipsia are common symptoms.

Possible alternative diagnoses are diuretic (thiazide) abuse or Gitelman's syndrome (the difference is that Gitelman's syndrome causes hypocalciuria and Bartters causes hypercalciuria). Type 4 renal tubular acidosis occurs in diseases associated with a failure of aldosterone action or hypoaldosteronism.



[ Q: 1011 ] MRCPass - Endocrinology

A 55 year old man has gynaecomastia.

*Which one of the following drugs is most likely to be responsible?*

- 1- Ketoconazole
- 2- Morphine
- 3- Frusemide
- 4- Metoprolol
- 5- Paracetamol

## Answer &amp; Comments

**Answer:** 1- Ketoconazole

Testosterone replacement therapy, Testicular tumours, ACE inhibitors, calcium antagonists, digoxin, cimetidine, ketoconazole, metronidazole, tricyclic anti-depressants and benzodiazepines may cause gynaecomastia.



[ Q: 1012 ] MRCPass - Endocrinology

An 17 year lady presents with a 6 month history of secondary amenorrhoea. She had previously been prescribed Temazepam for anxiety. On examination, she had galactorrhoea expression. Her prolactin concentration was 4500 mu/l (50-450). Pregnancy test was negative.

*What is the likely diagnosis?*

- 1- Acromegaly
- 2- Pituitary microadenoma
- 3- Polycystic ovarian syndrome
- 4- Drug induced hyperprolactinaemia
- 5- Turner's syndrome

## Answer &amp; Comments

**Answer:** 2- Pituitary microadenoma

The history examination findings together grossly elevated prolactin concentration are suggestive of a microprolactinoma. The most frequent symptoms at onset are oligoamenorrhoea (60%) and galactorrhoea (50%), and headaches. Treatment is with bromocriptine (e.g. 5 mg od).



[ Q: 1013 ] MRCPass - Endocrinology

A 30 year old lady has Polycystic ovarian syndrome. She mentions difficulty conceiving.

*Which one of the following drugs can help improve fertility?*

- 1- Metformin
- 2- Testosterone
- 3- Ethinyl oestradiol
- 4- Spironolactone
- 5- Cyproterone acetate

## Answer &amp; Comments

**Answer:** 1- Metformin

Polycystic Ovarian Syndrome (PCOS) is characterized by irregular ovulation and menses, obesity, insulin resistance, acne, and hirsutism (excessive hair growth). Impaired fertility is a prominent feature of PCOS. This is believed to result from elevated insulin levels that stimulate excess androgen production by the ovaries. The androgens cause premature follicular wasting which causes inconsistent or absent ovulation, which is associated with infertility.

Metformin has been shown to increase rate of conception in PCOS through improved insulin sensitivity.



A polycystic ovary



[ Q: 1014 ] MRCPass - Endocrinology

A 25 year old lady has oligomenorrhoea. As part of the hormone screen, she has a prolactin level of 700 mU/l (90-520).

*Which one of the following is a cause of this biochemical picture?*

- 1- Thyrotoxicosis
- 2- Chlorpromazine
- 3- Primary ovarian failure
- 4- Endometrial tumour
- 5- Post transsphenoidal surgery

#### Answer & Comments

Answer: 2- Chlorpromazine

Hyperprolactinaemia can be caused by drugs (OCP or phenothiazines), hypothyroidism, liver or renal failure, pituitary adenoma /acromegaly.



[ Q: 1015 ] MRCPass - Endocrinology

A 53 year old man with insulin dependent diabetes has routine follow up. On examination, neovascularization was found on fundoscopy. Blood pressure was 146/92mm Hg.

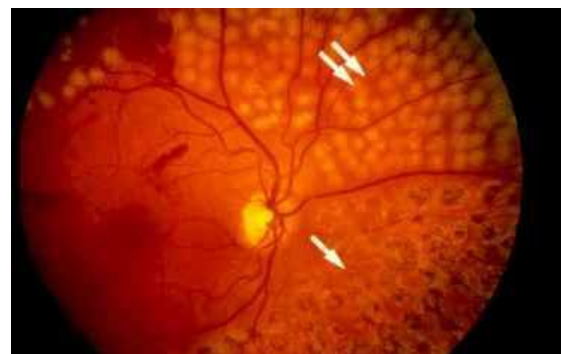
*What is the treatment of choice?*

- 1- Better glycaemic control
- 2- Follow up after 3 months
- 3- Photocoagulation
- 4- Better blood pressure control
- 5- Statin

#### Answer & Comments

Answer: 3- Photocoagulation

Treatment is directed at regressing neovascularisation using Argon laser pan-retinal photocoagulation. The new vessels themselves are not targeted but photocoagulation is spread over a wide area in order to destroy ischaemic retina and remove the vasoproliferative stimulus. There is variable visual loss and night blindness.



Photocoagulation scars following laser treatment



[ Q: 1016 ] MRCPass - Endocrinology

A 60 year old man has had a



thyroidectomy following a diagnosis of follicular carcinoma. 2 days later, he develops tingling sensations in his limbs and neuromuscular irritability.

*Which of the following is important?*

- 1- Free T4
- 2- TSH
- 3- Triiodothyronine
- 4- Corrected calcium
- 5- Magnesium

#### Answer & Comments

**Answer:** 4- Corrected calcium

The diagnosis is likely to be hypoparathyroidism related hypocalcaemia. Treatment is with intravenous calcium and calcitriol supplementation. Tetany and carpo pedal spasm may occur.



[ Q: 1017 ] MRCPass - Endocrinology

An 22 year old engineering student presents with polyuria and polydipsia.

*Which one of the following features will help to confirm a diagnosis of diabetes mellitus?*

- 1- 3+ ketonuria
- 2- A fasting plasma glucose of 7.5 mmol/L
- 3- A plasma glucose of 9.2 mmol/l 2 hours after 75 grams of oral glucose.
- 4- An HbA1c of 6.5%
- 5- A random plasma glucose of >9 mmol/L

#### Answer & Comments

**Answer:** 2- A fasting plasma glucose of 7.5 mmol/L

A random glucose of >11.1 and a fasting glucose of >7.0 mmol/L would be regarded as confirmatory. A raised glycosylated haemoglobin (HbA1c) is also highly suggestive but diagnostic.



[ Q: 1018 ] MRCPass - Endocrinology

A 18 year old female with Addison's disease has hydrocortisone treatment with a dose of 20 mg in the morning and 10 mg in the evening.

*What dose of prednisolone would provide an equivalent daily dose as her hydrocortisone?*

- 1- 7.5 mg
- 2- 10 mg
- 3- 12.5 mg
- 4- 15 mg
- 5- 20 mg

#### Answer & Comments

**Answer:** 1- 7.5 mg

Equivalent dose strength of prednisolone: hydrocortisone is 4 : 1. The total dose of hydrocortisone is 30mg and prednisolone is 7.5mg.



[ Q: 1019 ] MRCPass - Endocrinology

A 75 year old man has a decreased conscious level and is brought into hospital. He has a blood glucose of 45 mmol/L and sodium of 150 mmol/l. Urinalysis reveals no ketones.

*How should the patient be managed?*

- 1- DIGAMI regime
- 2- Half normal saline and normal sliding scale insulin
- 3- Half normal saline and reduced insulin sliding scale
- 4- 10% dextrose infusion
- 5- 5% dextrose with insulin sliding scale

#### Answer & Comments

**Answer:** 3- Half normal saline and reduced insulin sliding scale



The patient has hyperosmolar non ketotic coma. When sodium is greater than 145 mmol/l, the patient should be given half normal saline, and a sliding scale with low insulin doses (there is increased insulin sensitivity).



[ Q: 1020 ] MRCPass - Endocrinology

A 70 year old man has who presented with palpitations has runs of non sustained ventricular tachycardia during telemetry. Investigations show a serum magnesium of 0.3 mmol/l (0.7-1.5).

*Which one of the following is likely to have caused this biochemical abnormality?*

- 1- Elevated PTH level
- 2- Diuretics
- 3- Hyperphosphataemia
- 4- Chronic renal failure
- 5- Antacids

Answer & Comments

Answer: 2- Diuretics

Hypomagnesaemia may lead to life threatening ventricular arrhythmias especially in conjunction with hypokalaemia.

Possible causes of hypomagnesaemia are: Alcoholism, Drugs (Loop Diuretics, Gentamicin, Cisplatin), Gastrointestinal disorders (Vomiting, Diarrhoea, Malabsorption), Renal loss, Hypercalcaemia, Renal tubular acidosis.



[ Q: 1021 ] MRCPass - Endocrinology

A 35 year old lady has skin pigmentation, hypotension, hyponatraemia. A short synacthen test shows a rise in cortisol from 100 to 140 µg/ml.

*What is the diagnosis?*

- 1- Papillary thyroid carcinoma
- 2- Ovarian fibroids

- 3- Pheochromocytoma
- 4- Hepatocellular carcinoma
- 5- Addison's disease

Answer & Comments

Answer: 5- Addison's disease

Addison's disease is described. Many autoimmune diseases are associated e.g. vitiligo, diabetes, primary ovarian failure and pernicious anaemia.



[ Q: 1022 ] MRCPass - Endocrinology

A 45 year old man presents to his GP complaining a disseminated, asymptomatic papular eruption. Physical examination revealed obesity with hundreds of pink to yellowish, soft papules located over the buttocks, knees, elbows and neck.

He is found to have a triglyceride level of 5.2 (<1.69) mmol/l cholesterol 6.5 (<5.2) mmol/l.

*Which one of the following is most likely to be associated?*

- 1- Nephrotic syndrome
- 2- Loop diuretic
- 3- Amyloidosis
- 4- Kartagener's syndrome
- 5- Hyperthyroidism

Answer & Comments

Answer: 1- Nephrotic syndrome

List of causes of raised triglycerides are

nephrotic syndrome

hypothyroidism

steroids

diabetes mellitus

renal failure

oral contraceptive pill

glycogen storage disease (Von Gierke's)

This patient has eruptive xanthomas, have also been reported in patients with acquired forms of hypertriglyceridemia secondary to uncontrolled diabetes mellitus, nephrotic syndrome, alcohol and drug abuse.

In combination with elevated cholesterol, nephrotic syndrome is a likely diagnosis.



Eruptive Xanthoma



[ Q: 1023 ] MRCPass - Endocrinology

An 70 year old lady is admitted with loss of consciousness. She has a temperature of 35 C, has a heart rate of 55, evidence of cardiac failure, hypoventilation, hypoglycaemia and hyponatraemia.

*Which medication doses should be administered?*

- 1- Free T3 40 micrograms daily
- 2- Dexamethasone 8 mg orally daily
- 3- Hydrocortisone 100 mgs iv 8 hourly
- 4- Oral thyroxine 125 micrograms daily
- 5- Levothyroxine 2000 micrograms by slow intravenous infusion every 8 hours

Answer & Comments

**Answer:** 3- Hydrocortisone 100 mgs iv 8 hourly

The patient has myxoedema coma. Hydrocortisone 100 mgs iv 8 hourly should be used to protect against the possibility of associated adrenocortical deficiency. An initial levothyroxine (T4) dose of 100 to 500 µg administered intravenously should be

followed by 75 to 100 µg administered intravenously daily until the patient is able to take oral replacement.



[ Q: 1024 ] MRCPass - Endocrinology

A 52 year old man has been to her GP a week ago for pharyngitis. He presents to casualty feeling unwell with fevers and he has diffuse, widespread areas of purpuric rash all over his body.

Investigations show :

Sodium 125 mmol/L (135-145)

Potassium 5.2 mmol/L (3.5-5.0)

Chloride 91 mmol/L (95-105)

Glucose 2.6 mmol/L (3.0-5.5)

*The most likely diagnosis is:*

- 1- MEN 2
- 2- Waterhouse-Friderichson syndrome
- 3- Addison's disease
- 4- Sheehan's syndrome
- 5- Alkaptonuria

Answer & Comments

**Answer:** 2- Waterhouse-Friderichson syndrome

Waterhouse-Friderichson syndrome is due to meningococcal septicaemia resulting in adrenal haemorrhagic insufficiency. Symptoms and signs include hypotension, abdominal pain, hyponatremia. The progression is rapid. There may also be disseminated intravascular coagulation in patients with this syndrome. Mortality may approach 100%.

The treatment is as that for meningococcal infection, but with the addition of adrenal support with hydrocortisone, given intravenously in a dose of 200 mg per four hours.



Diffuse purpuric rash in Waterhouse-Friderichsen syndrome



[ Q: 1025 ] MRCPass - Endocrinology

A previously fit 36 year old man presents with a 3 month history of weight loss, pallor and lethargy. There is no relevant past medical history and he does not take regular medication. His blood pressure was 103/56 mmHg with

a 20 mm Hg postural change measured. He had unremarkable neurological and systemic examination with a

normal computerised tomography and magnetic resonance imaging of the brain. Investigations show :

Haemoglobin 10.5 g/dL

serum sodium 128 mmol/L

serum potassium 6.2 mmol/L

serum urea 4.0 mmol/L

serum creatinine 85 umol/L

serum Total T4 60 nmol/L (50 - 150)

serum TSH 9 mU/L (0.2 - 5.5)

*Which of the following is the most useful diagnostic investigation?*

- 1- Anti-thyroid peroxidase antibody titre
- 2- Short synacthen test
- 3- Free T3 concentration
- 4- Glucose tolerance test
- 5- Growth hormone level

Answer & Comments

Answer: 2- Short synacthen test

Hyponatraemia and mild hypothyroidism suggests that this patient might have Addison's disease. The clinical history of lethargy, weight loss and postural hypotension also fits the diagnosis.



[ Q: 1026 ] MRCPass - Endocrinology

A 35 year old secretary has a blood pressure of about 200/100 mmHg on several occasions. She complains of polyuria, and muscle weakness.

Investigations reveal:

sodium 146 mmol/L

potassium 2.4 mmol/L

Chloride 105 mmol/L

Bicarbonate 31 mmol/L

Urea 8.4 mmol/L

*Which one of the following conditions is most likely?*

- 1- Medullary thyroid carcinoma
- 2- Pancreatic tumour
- 3- Adrenal adenoma
- 4- Adrenal hyperplasia
- 5- Hypoaldosteronism

Answer & Comments

Answer: 3- Adrenal adenoma

The features of high sodium and low potassium along with hypertension are suggestive of primary hyperaldosteronism. The most common cause of primary hyperaldosteronism is unilateral adenoma (Conn's syndrome).



An adrenal adenoma

**[ Q: 1027 ] MRCPass - Endocrinology**

A 22 year old girl is admitted with a 3-day history of rigors due to a urinary tract infection. On examination, she has a temperature of 39°C, looks unwell, has a body mass index of 30 kg/m<sup>2</sup>.

Initial investigations reveal:

Potassium 4.2 mmol/L (3.5-5)

Urea 6 mmol/L (2.5-7)

Glucose 30 mmol/L (3.0-6.0)

pH 7.4 (7.36-7.44)

Standard bicarbonate 12 mmol/l

Base deficit -12

*Which one of the following is the best initial treatment?*

- 1- Metformin
- 2- Gliclazide
- 3- Acarbose
- 4- Sliding scale IV insulin infusion
- 5- Glargine insulin

**Answer & Comments**

**Answer:** 4- Sliding scale IV insulin infusion

The patient has mild acidosis and hyperglycaemia, suggestive of diabetic ketoacidosis, and hence should be on a sliding scale insulin regime.

**[ Q: 1028 ] MRCPass - Endocrinology**

A 25 year old lady is unable to

breast-feed following delivery of a baby. Her pregnancy was complicated by severe intrapartum bleeding due to an undiagnosed placenta praevia. She remains amenorrhoeic 3 months after delivery. She complains of extreme lethargy.

Investigations show : sodium 129 mmol/l, potassium 3.4 mmol/l, urea 5 µmol/l, creatinine 90 µmol/l.

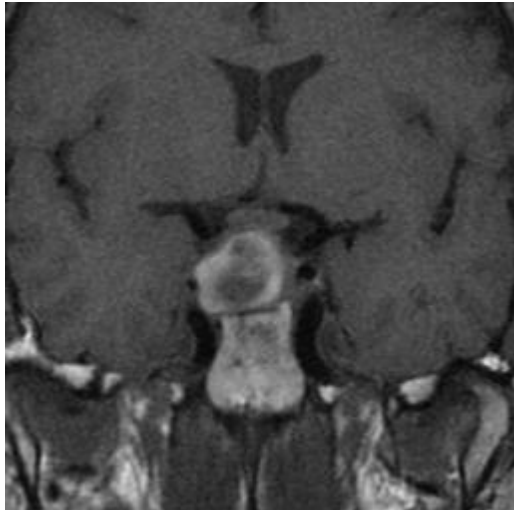
*The diagnosis is likely to be:*

- 1- Bilateral adrenal infarction
- 2- Normal pregnancy physiology
- 3- Prolactinoma
- 4- Multiple endocrine neoplasia
- 5- Pituitary apoplexy

**Answer & Comments**

**Answer:** 5- Pituitary apoplexy

The word apoplexy is defined as a sudden neurologic impairment, usually due to a vascular process. Pituitary apoplexy is characterized by sudden onset of headache, visual symptoms, altered mental status, and hormonal dysfunction due to acute hemorrhage or infarction of a pituitary gland. The pituitary gland is susceptible to infarction during pregnancy due to its increased size/blood flow. Hyponatraemia, hyperkalaemia and hypoglycaemia are as a result of secondary adrenal failure due to lack of ACTH.



MRI showing a heterogenous pituitary mass in the sella, which is non enhancing - Pituitary Apoplexy



[ Q: 1029 ] MRCPass - Endocrinology

A 60 year old woman with a past medical history of hypertension is assessed. She has a 45 pack year smoking history. She comes to the urgent care clinic today complaining of a cough and shortness of breath for the past week. Her physical exam is notable for both mild wheezing and rhonchi, more pronounced on the right side than the left.

Lab results include the following:

Na 126 mmol/l

K 4.4 mmol/l

Creatinine 120 umol/l

Glucose 6 mmol/l

Urine osmolality is 400 mosm/kg

Plasma osmolality 285 mosm/kg

*What is the diagnosis?*

- 1- Renal salt wasting
- 2- Cranial diabetes insipidus
- 3- Nephrogenic diabetes insipidus
- 4- SIADH
- 5- Psychogenic polydipsia

Answer & Comments

Answer: 4- SIADH

SIADH is confirmed by inappropriately elevated urine osmolality (often above 300 mOsm/kg) and urine sodium concentration (usually above 20 mEq/liter). This case scenario is consistent with a lung carcinoma.

- Hyponatremia with hypo-osmolality
- Elevated renal excretion of sodium (> 20 mEq/L)
- Normal volume status
- Inappropriately elevated urine osmolality for the plasma osmolality

SIADH



[ Q: 1030 ] MRCPass - Endocrinology

A 40 year old patient has investigation for Cushingoid features of buffalo hump and central obesity. Serum potassium is low at 2.5 mmol. Her ACTH value is 200 pg/ml (5-50) and 24 hour urine cortisol is grossly elevated.

*Which one of the following is the most likely diagnosis?*

- 1- Adrenal carcinoma
- 2- Adrenal adenoma
- 3- Pituitary dependent Cushing's
- 4- Ectopic ACTH syndrome
- 5- ACTH overdose

Answer & Comments

Answer: 4- Ectopic ACTH syndrome

In ectopic ACTH syndrome, hypokalaemic alkalosis is typical. Ectopic ACTH is not suppressed by high doses of steroids such as 8 mg dexamethasone. Hypocalcaemia is not caused.

Ectopic ACTH is typically caused by small cell carcinoma of the lung. Thymoma, carcinoid tumour, medullary carcinoma of the thyroid, pancreatic carcinoma and pheochromocytoma are associated with ectopic ACTH secretion. Squamous cell

carcinoma is frequently associated with hypercalcaemia.



[ Q: 1031 ] MRCPass - Endocrinology

A 50 year old woman has weight loss, palpitations and diarrhoea.

Examination reveals a single nodule on the left lobe of the thyroid, measuring 3 cm in size. Thyroid scintigraphy with Tc99 shows increased uptake within this nodule.

Thyroid function tests showed a free thyroxine of 29 pmol/L (9-25 pmol/L) and TSH <0.04 mU/L (0.5-5).

*What is the best management?*

- 1- Carbimazole
- 2- Propylthiouracil
- 3- Total thyroidectomy
- 4- Partial thyroidectomy
- 5- Radioactive iodine

Answer & Comments

Answer: 5- Radioactive iodine

The technetium scan suggests that the thyrotoxicosis is due to a solitary toxic nodule. Toxic thyroid nodules are best treated with radioactive iodine.



[ Q: 1032 ] MRCPass - Endocrinology

A 44 year old man is investigated for hypertension. His blood pressure is consistently above 180/90 mmHg.

Blood results show :

pH 7.5

pO<sub>2</sub> -13 kPa

pCO<sub>2</sub> - 4 kPa

bicarbonate 32 (20-28) mmol/l

sodium 138 mmol/l

potassium 2.7 mmol/l

urea 6 µmol/l

creatinine 100 µmol/l

*What is the likely diagnosis?*

- 1- Essential hypertension
- 2- Conn's syndrome
- 3- Secondary hyperaldosteronism
- 4- Pheochromocytoma
- 5- Congenital adrenal hyperplasia

Answer & Comments

Answer: 2- Conn's syndrome

Hypokalaemic alkalosis with refractory hypertension suggests primary hyperaldosteronism (Conn's syndrome).

Secondary hyperaldosteronism would also be possible but tends to cause hypertension which is easier to control.

Liddle's syndrome and Bartter's syndrome also cause hypokalaemic alkalosis. If this case scenario was a child with precocious puberty then consider congenital adrenal hyperplasia.



[ Q: 1033 ] MRCPass - Endocrinology

A 35 year old lady has had no periods for two years. She also notices increased hair growth. Examination reveals male pattern balding and hair growth, and clitoromegaly.

*What is the likely diagnosis?*

- 1- Cushing's disease
- 2- Adrenal tumour
- 3- MEN
- 4- Congenital adrenal hyperplasia
- 5- Ovarian tumour

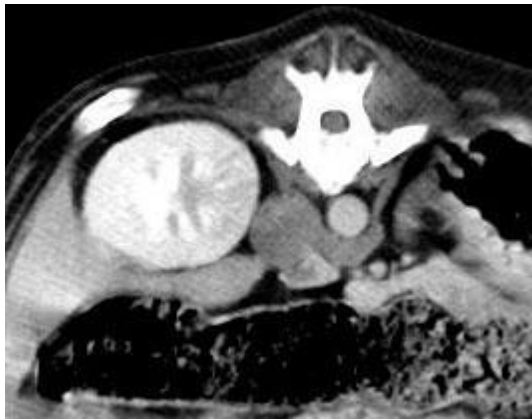
Answer & Comments

Answer: 2- Adrenal tumour

An adrenal tumour is most likely, with androgen secretion. Virilisation occurs. These



are aggressive tumours and the treatment option is surgery or radiotherapy.



MRI of a Large Right adrenal tumour



[ Q: 1034 ] MRCPass - Endocrinology

A 55 year old man presents with generalised lethargy, dizziness, headache, visual disturbance, impotence and decreased facial hair.

On examination he has a blood pressure of 110/70 with a postural drop.

On examination of his visual fields he is found to have a bitemporal hemianopia. The prolactin level is 4500 mIU/L.

An insulin tolerance test is performed and the blood glucose levels falls to 1.3 mmol/L and the patient becomes sweaty and tachycardic.

*What is the diagnosis?*

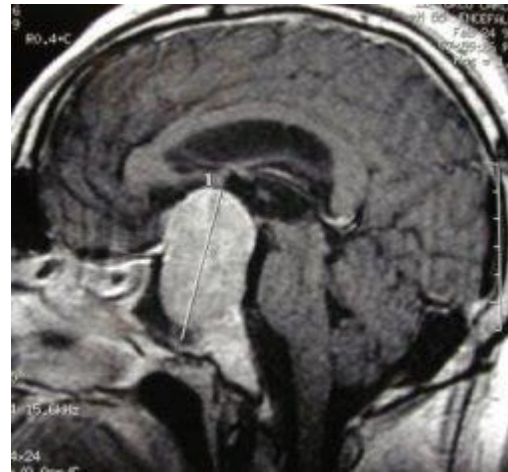
- 1- Medullary thyroid tumour
- 2- Addison's disease
- 3- Adrenal tumour
- 4- Pheochromocytoma
- 5- Pituitary macroadenoma

Answer & Comments

Answer: 5- Pituitary macroadenoma

The combination of headache, bitemporal hemianopia and the prolactin level of > 3,600 mIU/L suggests the patient has a macroadenoma.

This patient is likely to have an impaired response to the insulin tolerance test as prolactinoma may cause hyposecretion of other hormones. It is likely that the patient has ACTH and cortisol deficiency as he has features that are suggestive (tiredness, dizziness, postural BP drop).



MRI showing a macroadenoma



[ Q: 1035 ] MRCPass - Endocrinology

A 60 year man has headaches and visual impairment. He is suspected of having acromegaly.

*Which one of following is the best investigation to confirm the diagnosis?*

- 1- Insulin like growth factor 1 (IGF1)
- 2- Growth hormone releasing hormone test
- 3- 9 am growth hormone concentrations
- 4- Glucose tolerance test with growth hormone concentration
- 5- Insulin tolerance test with growth hormone concentrations

Answer & Comments

Answer: 4- Glucose tolerance test with growth hormone concentration

The diagnosis of acromegaly is confirmed by inadequate suppression of Growth Hormone concentrations below 2 mU/l in an oral glucose tolerance test.



## [ Q: 1036 ] MRCPass - Endocrinology

A 45 year old woman has palpitations, tremors, and episodes of anxiety with associated sweating and confusion. There is no history of diabetes. Blood insulin levels are increased with increased C peptide levels when measured during one of these episodes.

*It is most likely due to:*

- 1- Alcohol intoxication
- 2- Exogenous insulin
- 3- End stage renal disease
- 4- Insulinoma
- 5- Sepsis

## Answer &amp; Comments

Answer: 4- Insulinoma

Insulinoma caused high endogenous insulin secretion and increased C peptide levels. This would cause hypoglycaemia and symptoms such as those listed above.



## [ Q: 1037 ] MRCPass - Endocrinology

A 35 year old lady was referred from her GP for hypertension. Her plasma K is 2.8 mmol/L. Her BP was 210/130.

Funduscopy revealed a bilateral papilloedema. Investigations show : Supine Plasma aldosterone 650 (100-450) Erect 30mins 620 pmol/L Supine Renin activity <0.2 (1.1-2.7), Erect <0.2 (2.8-4.5).

*The underlying diagnosis is:*

- 1- Liddle's syndrome
- 2- Bartter's syndrome
- 3- Addison's disease
- 4- Secondary hyperaldosteronism
- 5- Primary hyperaldosteronism

## Answer &amp; Comments

Answer: 5- Primary hyperaldosteronism

A raised aldosterone level and suppressed renin levels suggest primary rather than secondary hyperaldosteronism.



## [ Q: 1038 ] MRCPass - Endocrinology

A 42 year woman presents with episodic sweats and tremors which are relieved by sugary drinks. She gained approximately 5 kg in weight in the past 3 months.

Her investigations show normal full blood count, normal urea and electrolytes, and a fasting plasma glucose concentration of 3.5 mmol/L.

*What is the most appropriate investigation for this patient?*

- 1- Water deprivation test
- 2- 72 hour fast
- 3- Oral glucose tolerance test
- 4- CT scan of the head
- 5- Random Insulin C peptide concentration

## Answer &amp; Comments

Answer: 2- 72 hour fast

The diagnosis is insulinoma. The standard method of clinching the diagnosis during a 72 hour fast is by the demonstration of inappropriately high insulin C peptide during spontaneous hypoglycaemia.

Measurement of C peptide is also useful in excluding factitious hypoglycaemia from self injection of insulin. Insulin preparations do not contain C peptide, hence if insulin levels were high and C peptide levels were undetectable then exogenous insulin abuse is likely.



## [ Q: 1039 ] MRCPass - Endocrinology

A 35 year old woman with thyrotoxicosis is commenced on carbimazole.

*Which one of the following is the first blood test to improve?*

- 1- Thyroid stimulating hormone
- 2- Free T3
- 3- Total T4
- 4- Thyroglobulin
- 5- Total T3

#### Answer & Comments

**Answer:** 3- Total T4

Thyroxine (T4) is formed by coupling of iodinated tyrosine residues within thyroglobulin (TG).

Carbimazole acts by blocking the iodination of tyrosine residues, hence reducing levels of T4.



#### [ Q: 1040 ] MRCPass - Endocrinology

A 35 year old woman has had a blood pressure of 180/105 mmHg for the past month. She has also had headaches, palpitations and sweaty episodes several times a day. Urine adrenaline is 350 (<80) nmol/l and noradrenaline is 2300 (<780) nmol/l.

*Which one of the following is the likely diagnosis?*

- 1- Renal artery stenosis
- 2- Conn's syndrome
- 3- Essential hypertension
- 4- Pheochromocytoma
- 5- White coat syndrome

#### Answer & Comments

**Answer:** 4- Pheochromocytoma

The diagnosis is pheochromocytoma. Although paraganglioma (10% of pheochromocytomas are extra-adrenal) should be considered, it is associated with a raised noradrenaline. Both raised adrenaline and noradrenaline should make one suspect adrenal pheochromocytoma.



#### [ Q: 1041 ] MRCPass - Endocrinology

A 45 year old woman has undergone investigations following routine blood tests showing hypercalcaemia.

She has no symptoms. She has a calcium of 3.0 mmol/l (range 2.4-2.6 mmol/l), and 24-hour urinary calcium excretion 25 mg (100-300).

*What is the likely diagnosis?*

- 1- Primary hyperparathyroidism
- 2- Secondary hyperparathyroidism
- 3- Multiple myeloma
- 4- Familial hypocalciuric hypercalcaemia
- 5- Widespread bony metastases

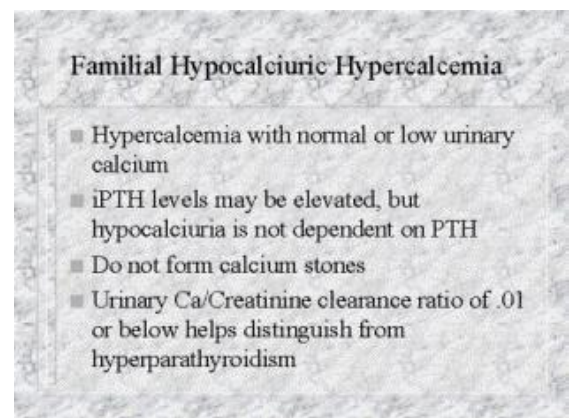
#### Answer & Comments

**Answer:** 4- Familial hypocalciuric hypercalcaemia

The diagnosis here is familial hypocalciuric hypercalcaemia.

Familial hypocalciuric hypercalcaemia is a rare autosomal dominant disorder which has only recently been recognised in which there is reduced urinary calcium excretion in the presence of hypercalcaemia.

Diagnosis is made on family history and determination of low urinary calcium clearance (this does not happen in hyperparathyroidism).



#### [ Q: 1042 ] MRCPass - Endocrinology

A 20 year old lady presents to casualty with dizziness, lethargy, nausea and vomiting. On examination, she has a BP of 95/50 mmHg and generalised hyperpigmentation. Blood tests showed: Na 129 mmol/l K 5.8 mmol/l, Urea 6.5 umol/l, Creat 110 umol/l.

*The underlying diagnosis is likely to be:*

- 1- Acute intermittent porphyria
- 2- Hypoparathyroidism
- 3- Hypothyroidism
- 4- Secondary adrenal insufficiency
- 5- Primary adrenal insufficiency

#### Answer & Comments

Answer: 5- Primary adrenal insufficiency

The clinical picture is consistent with an Addisonian picture. ACTH is produced in primary adrenal insufficiency, hence causing hyperpigmentation. This would not be expected in secondary adrenal insufficiency.



[ Q: 1043 ] MRCPass - Endocrinology

*Which one of the following is the commonest presentation of a prolactinoma in males?*

- 1- Galactorrhoea
- 2- Impotence
- 3- Gynaecomastia
- 4- Obesity
- 5- Depression

#### Answer & Comments

Answer: 2- Impotence

In men with prolactinoma the commonest of the features mentioned above is impotence.

Because men have no reliable indicator such as menstruation, many men delay seeking medical advice until they have headaches or visual problems caused by the enlarged

pituitary. There may also be a gradual loss of sexual function or libido.



[ Q: 1044 ] MRCPass - Endocrinology

A 60 year old man is found to have a blood pressure of 185/110 mmHg. Serum biochemistry showed normal electrolytes, and normal renal function. An abdominal ultrasound scan shows a 5-cm right adrenal mass. Adrenal surgery is scheduled.

*Which one of the following tests would have been most helpful prior to surgery?*

- 1- Short synacthen test
- 2- 24 hour urinary cortisol
- 3- MRI scan of the abdomen
- 4- Renin and aldosterone levels
- 5- Urinary free catecholamines

#### Answer & Comments

Answer: 5- Urinary free catecholamines

Urinary catecholamines would confirm a diagnosis of a secretory pheochromocytoma. If so, the patient needs alpha blockade prior to beta blockade, then surgery. MRI of the abdomen or MIBG scan is also helpful following biochemical confirmation of the diagnosis.



[ Q: 1045 ] MRCPass - Endocrinology

A 60 year old woman who complains tiredness. Her relatives mentioned depression and has been on medication.

She has also been treated for cardiac failure with diuretics. Her blood tests reveal a corrected calcium 2.90 (2.2-2.7) mmol/l.

*Which one of the following is most likely to have caused the raised calcium?*

- 1- Frusemide
- 2- Paroxetine
- 3- Lisinopril

4- Vitamin D deficiency

5- Lithium

#### Answer & Comments

Answer: 5- Lithium

Drugs producing hypercalcemia include lithium, alkaline antacids, DES, diuretics (chronic administration of thiazides), estrogens (incl. oral contraceptives), and progesterone.



[ Q: 1046 ] MRCPass - Endocrinology

*What dose of prednisolone is equivalent in its glucocorticoid potency to 100 mg of hydrocortisone?*

1- 5 mg

2- 25 mg

3- 50 mg

4- 75 mg

5- 100 mg

#### Answer & Comments

Answer: 2- 25 mg

Prednisolone is 4 x more potent than hydrocortisone, and dexamethasone is between 40 x more potent than hydrocortisone.



[ Q: 1047 ] MRCPass - Endocrinology

A 60 year old man has been taking amiodarone for paroxysmal atrial fibrillation. He presents with lethargy and weight loss of half a stone over 2 months. Investigations reveal: Free T<sub>4</sub> 35 pmol/L (10-22), TSH <0.01 mU/L (0.5-4.5).

*How should this patient be treated?*

1- Thyroxine

2- Thyroidectomy

3- Hydrocortisone

4- Carbimazole

5- Radioiodine therapy

#### Answer & Comments

Answer: 4- Carbimazole

The appropriate initial treatment of amiodarone induced hyperthyroidism would be carbimazole.

Two types of amiodarone induced hyperthyroidism are recognised. The first is a consequence of iodine overload contained within amiodarone of which the above is a typical example. The second type is due to an acute thyroiditis. This is best treated by prednisolone.



[ Q: 1048 ] MRCPass - Endocrinology

A 42 year old lady presents with malaise, thirst and increasing nocturia. The symptoms have worsened over the last 2 months. She had an episode of renal colic previously. Her GP had noted an eruptive, painful, erythematous rash on her anterior shins as well previously.

*What is the likely metabolic abnormality?*

1- Hypomagnesaemia

2- Hyperglycaemia

3- Hypercalcaemia

4- Hyponatraemia

5- Hyperoxaluria

#### Answer & Comments

Answer: 3- Hypercalcaemia

This lady has sarcoidosis. Hypercalcemia in sarcoidosis is due to the uncontrolled synthesis of 1,25-dihydroxyvitamin D<sub>3</sub> by macrophages. There is associated renal calculi due to hypercalcaemia and also erythema nodosum.





## [ Q: 1049 ] MRCPass - Endocrinology

A 55 year old patient with type 2 diabetes is reviewed in the diabetic clinic.

*Which of the following is a feature of diabetic neuropathy to watch out for?*

- 1- Cervical myelopathy
- 2- Brisk reflexes
- 3- Muscle hypertrophy
- 4- Loss of vibration sense
- 5- Myotonia

## Answer &amp; Comments

Answer: 4- Loss of vibration sense

Autonomic neuropathy to the gut, bladder and sexual organs (impotence) can occur. A 3rd nerve mononeuropathy can occur. Motor neuropathy can cause muscle wasting, and sensory neuropathy causes vibration sensory loss. With myotonia, prolonged contraction of muscle fibres associated with muscle dystrophy is due to genetic causes of muscle protein abnormality and is not neurologically dependent.



## [ Q: 1050 ] MRCPass - Endocrinology

A 40 year old patient who is diabetic is concerned about having kidney problems in the future. He has 1+ proteinuria on urine dipstick.

*Which of the following is most important in order to preserve renal function?*

- 1- Tight glycaemic control
- 2- Tight hypertension control
- 3- Going on to insulin
- 4- Regular renal ultrasound and 24 hour urine check
- 5- Calcium replacement

## Answer &amp; Comments

Answer: 2- Tight hypertension control

Aggressive hypertension control is the best way of preventing progression from microalbuminuria to macroalbuminuria. Although glycaemic control is important, it is not as important as hypertensive control in preventing progression towards nephropathy.



## [ Q: 1051 ] MRCPass - Endocrinology

A 27-year-old female has been diagnosed as having thyrotoxicosis and has been started on carbimazole.

*Which one of the following is a major side effect of carbimazole?*

- 1- Agranulocytosis
- 2- Thrombocytosis
- 3- Cholangiocarcinoma
- 4- Pityriasis rosea
- 5- Vascular thrombosis

## Answer &amp; Comments

Answer: 1- Agranulocytosis

Major side effects of carbimazole are: agranulocytosis, thrombocytopaenia, acute hepatic necrosis, cholestatic hepatitis, lupus-like syndrome and vasculitis.



## [ Q: 1052 ] MRCPass - Endocrinology

A 40 year old man with hypertension was also found to be significantly hypokalemic.

*Which of the following investigation is most appropriate?*

- 1- Renal arteriography
- 2- Ultrasound of the abdomen
- 3- Renin: Aldosterone Ratio
- 4- Plasma ACTH
- 5- Plasma cortisol level

## Answer &amp; Comments

Answer: 3- Renin: Aldosterone Ratio



Conn's syndrome should be considered in a patient who is not on diuretics who has the following features:

hypertension, hypokalaemia and alkalosis. Investigation of choice is plasma renin and aldosterone - low renin and high aldosterone (raised aldosterone: renin ratio) suggests primary hyperaldosteronism.



[ Q: 1053 ] MRCPass - Endocrinology

A 50 year old lady has a history of breast cancer 5 years ago. She now has the following investigation results:

calcium 2.9 (2.25-2.7) mmol/l

phosphate 0.75 (0.8-8) pmol/l

Parathyroid hormone 5.1 (0.8-8) pmol/l

Skeletal survey - generalised osteopenia

*What is the diagnosis?*

- 1- Primary hyperparathyroidism
- 2- Breast cancer metastasis
- 3- Multiple myeloma
- 4- Vitamin D overdose
- 5- Paget's disease

Answer & Comments

Answer: 2- Breast cancer metastasis

The high calcium and slightly low phosphate would be consistent with high PTH, but the PTH level is normal. Bone metastases can cause PTH related peptide which would lead to hypercalcaemia.



[ Q: 1054 ] MRCPass - Endocrinology

A 60 year old woman is assessed in the rheumatology clinic for osteoporosis. She is 1 and a half years post menopausal and has a family history of osteoporosis.

*What therapy should be commenced?*

- 1- Vitamin D supplements

- 2- Cyclical oestrogen and progestogen
- 3- Calcium and vitamin D supplements
- 4- Etidronate
- 5- Calcium supplements

Answer & Comments

Answer: 2- Cyclical oestrogen and progestogen

As she is just recently post menopausal, combined HRT treatment is the most appropriate. At a later stage, calcium and vitamin D supplements would be beneficial. Etidronate is licensed for the prevention of further osteoporotic fractures and as prophylaxis against corticosteroid-induced osteoporosis.



[ Q: 1055 ] MRCPass - Endocrinology

A 65 year old woman has had increasing cold intolerance and weight gain. Observations include sinus bradycardia, depressed reflexes and a diffuse goitre.

Her serum TSH is 9 mU/L (0.5-4) with a free thyroxine of 7.2 pmol/L (9-25 pmol/L). Anti-thyroid peroxidase antibodies and anti-microsomal autoantibodies were detected at high titres.

*What is the diagnosis?*

- 1- Hashimoto's thyroiditis
- 2- Previous carbimazole therapy
- 3- Pituitary tumour
- 4- Follicular thyroid carcinoma
- 5- De Quervain's thyroiditis

Answer & Comments

Answer: 1- Hashimoto's thyroiditis

The clinical picture is hypothyroidism. This is likely to be due to primary autoimmune hypothyroidism, also known as Hashimoto's thyroiditis. This disorder occurs most commonly in middle-aged women and is

caused by the reaction of the immune system against the thyroid gland. It may occur in people with a family history of thyroid diseases or with other autoimmune diseases, especially type 1 diabetes or adrenal insufficiency.

De Quervain's thyroiditis (less likely diagnosis in this case) is a subacute painful thyroiditis and may result in hypothyroidism in the long term.



[ Q: 1056 ] MRCPass - Endocrinology

A 60 year old woman has received radioactive iodine over five years ago. She now comes for her annual thyroid function assessment. Her results reveal: Free Thyroxine 11 pmol/l (9.8-23), TSH 14 mU/l (0.5-4.5 mU/l), Total cholesterol 6.5 mmol/l (<5 mmol/l), Plasma triglycerides 2.1 mmol/l (<2 mmol/l).

*What is the most appropriate treatment for this patient's dyslipidaemia?*

- 1- Hormone replacement therapy
- 2- Simvastatin
- 3- Thyroxine
- 4- Carbimazole
- 5- Fibrate

Answer & Comments

Answer: 3- Thyroxine

The patient has subclinical hypothyroidism as reflected by a normal T4 but elevated TSH. A hypercholesterolaemia or hypertriglyceridaemia is frequently associated due impaired lipoprotein lipase function.

Treatment should be with thyroxine replacement first as the hypercholesterolaemia should resolve.



[ Q: 1057 ] MRCPass - Endocrinology

A 22 year old lady complains of feeling lethargic for several months. She also has generalized abdominal discomfort.

Investigations:

Hb 12.7 g/l

WBC  $5.7 \times 10^9/L$

Platelet  $290 \times 10^9/L$

ESR 42 mm/hr

Na 133 (135-144) mmol/l

K 2.9 (3.4-4.5) mmol/l

Urea 6.0 (3-7)  $\mu\text{mol/l}$

Creat 88 (50-100)  $\mu\text{mol/l}$

Bicarbonate 36 (20-28) mmol/l

Alkaline phosphatase 95 (50-110) iu/l

bilirubin 15 (0-17)  $\mu\text{mol/l}$

AST 35 (5-40) iu/l

Albumin 38 (33-44) g/l

*What is the likely underlying diagnosis?*

- 1- Pituitary tumour
- 2- Pheochromocytoma
- 3- Acromegaly
- 4- Anorexia nervosa
- 5- Addisons disease

Answer & Comments

Answer: 4- Anorexia nervosa

Persistent vomiting with anorexia nervosa would lead to dehydration, rebound peripheral edema, low sodium, low potassium, low chloride, metabolic alkalosis, low magnesium, and low phosphate.



[ Q: 1058 ] MRCPass - Endocrinology

A 40 year old lady with a history of end stage renal failure (on peritoneal dialysis) and hypertension presented to the hospital

with abdominal pain. She has been on treatment with a vitamin D analog calcitriol.  
 calcium 2.88 (2.25-2.7) mmol/l  
 phosphate 0.9 (0.8-1.4) mmol/l  
 PTH level 314 pg/ml (10-60 pg/ml).

*Which one of the following is the most likely diagnosis?*

- 1- Digeorge syndrome
- 2- Osteoporosis
- 3- Tertiary hyperparathyroidism
- 4- Waldenstrom's macroglobulinaemia
- 5- Osteomalacia

#### Answer & Comments

Answer: 3- Tertiary hyperparathyroidism

Secondary hyperparathyroidism occurs when the parathyroid glands secrete increased levels of PTH in response to low calcium; renal failure is the most common cause of secondary hyperparathyroidism.

If the causes of secondary hyperparathyroidism persist, one parathyroid gland may become autonomous; this gland produces excess PTH even when calcium is normal or elevated. This is known as tertiary hyperparathyroidism.



[ Q: 1059 ] MRCPass - Endocrinology

A 60 year old man with acromegaly is enquiring about prognosis.

*What is the most likely cause of mortality if the condition is untreated?*

- 1- Trauma from visual loss
- 2- Hypertensive left ventricular failure
- 3- Nephropathy
- 4- Colon carcinoma
- 5- Thyroid carcinoma

#### Answer & Comments

Answer: 2- Hypertensive left ventricular failure

In acromegaly, cardiovascular disease is the most important cause of mortality. Hypertensive cardiomyopathy is a common cause.



[ Q: 1060 ] MRCPass - Endocrinology

A 36 year old woman with type I diabetes complains of unsteadiness during walking. Visual acuity is normal.

Fundoscopy shows preproliferative diabetic retinopathy. There is loss of proprioception in the toes and ankles bilaterally and a small painless ulcer is noted under the right 1st metatarsal head.

*Which one of the following complications is likely?*

- 1- Diabetic retinopathy
- 2- Autonomic neuropathy
- 3- Peripheral neuropathy
- 4- Atherosclerosis
- 5- Diabetic ketoacidosis

#### Answer & Comments

Answer: 3- Peripheral neuropathy

Peripheral sensory neuropathy in a glove and stocking distribution is a frequent complication of long-standing diabetes mellitus. This causes loss of vibration, pain and temperature sensation early on and later proprioception may also be affected.



[ Q: 1061 ] MRCPass - Endocrinology

A 55 year old woman with Grave's disease is being considered for radioiodine treatment.

*What is the most common effect of radioiodine treatment?*

- 1- Thyrotoxicosis

- 2- Hypercalcaemia
- 3- Hypoglycaemia
- 4- Thyroid carcinoma
- 5- Hypothyroidism

#### Answer & Comments

**Answer:** 5- Hypothyroidism

Hypothyroidism is the commonest of these, and may be transient in the early period, post radioiodine. Hypothyroidism is the most common complication. TSH should be monitored 6 monthly after radioiodine. Incidence of thyroid carcinoma is not increased.



#### [ Q: 1062 ] MRCPass - Endocrinology

A 55 year old woman has hypertension due to pheochromocytoma. She has attacks of hot flushes and palpitations. Her 24-hour urinary catecholamines show a markedly raised noradrenaline.

*How should she be treated?*

- 1- Phenoxybenzamine only
- 2- Atenolol
- 3- Amlodipine and Propanolol
- 4- Phenoxybenzamine, Propanolol and then surgery
- 5- Surgery without delay

#### Answer & Comments

**Answer:** 4- Phenoxybenzamine, Propanolol and then surgery

Hypertension should be managed with phenoxybenzamine initially, increasing up to 80 mg per day, with addition of propanolol after 3-4 days of alpha blockade. Surgery without adequate alpha and beta blockade can result in hypertensive crisis (leading to high CVA, MI complications).



#### [ Q: 1063 ] MRCPass - Endocrinology

A 20 year old girl with an unusual facial appearance is found to have coarctation of the aorta. On examination, she had short stature, a webbed neck and lymphedema.

*Which is the likely diagnosis?*

- 1- Patau's syndrome
- 2- Noonan's syndrome
- 3- Turner's syndrome
- 4- Down's Syndrome
- 5- William's syndrome

#### Answer & Comments

**Answer:** 3- Turner's syndrome

Turner's syndrome is typically associated with coarctation of the aorta. They also have features of webbed neck, cubitus valgus, short fourth metacarpal, lymphoedema, low set ears and hypertension.

Noonan's syndrome has a phenotype similar to Turner's, and is associated with pulmonary stenosis rather than coarctation.



#### [ Q: 1064 ] MRCPass - Endocrinology

A 50 year woman complains of weight gain and menstrual irregularities. Her BMI is 34 kg/m<sup>2</sup>, blood pressure is 165/90 mmHg. Urinalysis shows 2+ glucose.

*Which investigation is likely to reveal the diagnosis?*

- 1- Renin and aldosterone
- 2- Fasting glucose
- 3- LH and FSH levels
- 4- 24 hour urine cortisol
- 5- Prolactin

#### Answer & Comments

**Answer:** 4- 24 hour urine cortisol

Weight gain, high BMI, hypertension, menstrual irregularities and glycosuria suggests a diagnosis of Cushing's syndrome. Investigations for this include the 24 hour urine cortisol, dexamethasone suppression test, ACTH levels and intra petrosal sinus sampling.



[ Q: 1065 ] MRCPass - Endocrinology

A 25 year old man presents with episodes of sweating and tachycardia. He has an enlarged adrenal gland on the left on the CT of the abdomen.

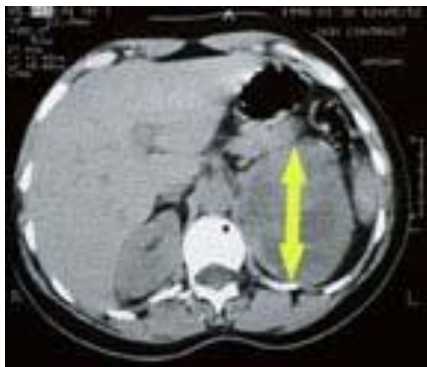
*In phaeochromocytoma, which of the hormones is predominantly secreted by the adrenal medulla?*

- 1- Natriuretic peptide
- 2- Antidiuretic hormone
- 3- Cortisol
- 4- Adrenaline
- 5- Aldosterone

Answer & Comments

Answer: 4- Adrenaline

The diagnosis is phaeochromocytoma, which is a tumour of the adrenal medulla. The adrenal cortex produces aldosterone, cortisol (glucocorticoid) and adrenal androgens. The medulla produces adrenaline and noradrenaline.



Phaeochromocytoma



[ Q: 1066 ] MRCPass - Endocrinology

An 18 yr old man has lethargy and nausea. His plasma calcium is 2.72 mmol/L. There is a family history of asymptomatic hypercalcaemia in the siblings.

Investigations: PTH 70 pg/ml (<60), F E Ca 0.8% (fractional excretion of calcium).

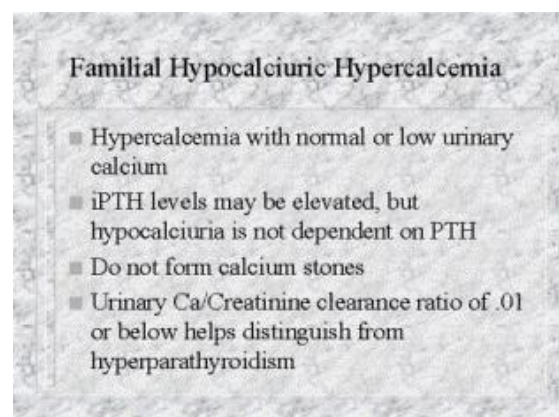
*The likely cause for this gentleman's hypercalcaemia is:*

- 1- Multiple myeloma
- 2- Primary hyperparathyroidism
- 3- Secondary hyperparathyroidism
- 4- Familial hypocalciuric hypercalcaemia
- 5- Vitamin D toxicity

Answer & Comments

Answer: 4- Familial hypocalciuric hypercalcaemia

Familial hypocalciuric hypercalcaemia is an autosomal dominant disease. The pathophysiology is due to a defective calcium receptor on the membranes of the parathyroid and renal tubular cells. This results in a decreased renal clearance of calcium, PTH is usually normal or increased, PO<sub>4</sub> is usually decreased. Typically, the Fractional Excretion of Ca is <1%.



[ Q: 1067 ] MRCPass - Endocrinology

A diagnosis of diabetes mellitus being considered in 30 year old woman who is



12 weeks pregnant. Her body mass index (BMI) was 20 kg/m<sup>2</sup>. A 75g oral glucose tolerance test shows the following results:

Time Plasma glucose concentration

0 hour 5.5 mmol/l

2 hour 12.8 mmol/l

*Which of the following is the appropriate next step in the patient's management?*

- 1- Gliclazide therapy
- 2- Subcutaneous insulin
- 3- Diet control
- 4- Metformin therapy
- 5- Repeat OGTT in four weeks

#### Answer & Comments

**Answer:** 2- Subcutaneous insulin

A pregnant lady with either gestational diabetes or undetected diabetes should go on to subcutaneous insulin to achieve good glycaemic control in view of the potential complications otherwise.



#### [ Q: 1068 ] MRCPass - Endocrinology

A 16 year old female is evaluated in the pediatric endocrinology clinic for primary amenorrhea. Her family reported that she had breast development at 11 years of age, but no other pubertal changes. A testosterone level was elevated at 3.08 ng/ml, and both pelvic ultrasound and CT scan showed absence of reproductive organs.

*What is the likely diagnosis?*

- 1- Anorexia nervosa
- 2- Early menopause
- 3- Androgen insensitivity syndrome
- 4- Klinefelters's syndrome
- 5- Turner's syndrome

#### Answer & Comments

**Answer:** 3- Androgen insensitivity syndrome

Androgen insensitivity syndrome (AIS), formerly known as testicular feminization, is an X-linked recessive condition resulting in a failure of normal masculinization of the external genitalia in chromosomally male individuals.

Most patients with complete androgen insensitivity have a female gender. Some patients are first seen in the teenage years for evaluation of primary amenorrhea, but most are identified in the newborn period by the presence of inguinal masses, which later are identified as testes during surgery.



#### [ Q: 1069 ] MRCPass - Endocrinology

A 45 year old woman presents with a history of increasing tiredness. On examination there is pigmentation of her skin creases and buccal mucosa. Her blood pressure is 85/50.

Investigations are as follows: Blood urea 8.2 mmol/l, Na 128 mmol/l, Potassium 6.2 mmol/l, Chloride 98 mmol/l, Bicarbonate 26 mmol/l.

*What is the likely diagnosis?*

- 1- Addison's disease
- 2- Porphyria
- 3- Hypoparathyroidism
- 4- Cushing's syndrome
- 5- Conn's syndrome

#### Answer & Comments

**Answer:** 1- Addison's disease

This patient has Addison's disease as suggested by hyperpigmentation, hyponatraemia and hypotension. A high 9 am plasma ACTH level with low or normal cortisol will confirm the diagnosis of primary hypoadrenalism. A low cortisol response with



the short ACTH (synacthen) test would also show that the adrenal gland is not responding to ACTH.



[ Q: 1070 ] MRCPass - Endocrinology

A 35 year old lady has recently been commenced on a thiazide diuretic. She has routine blood tests which reveal a sodium of 110 mmol/l, potassium 4.0 mmol/l, urea 6 µmol/l and creatinine 60 µmol/l.

*Which of the following features is most likely to occur?*

- 1- Hypertension
- 2- Tachycardia
- 3- Decrease in conscious level
- 4- Elevated moods
- 5- Miosis

Answer & Comments

Answer: 3- Decrease in conscious level

Severe hyponatraemia can cause seizures, obtundation/decreased conscious level, headaches, upper motor neuron signs (central pontine myelinolysis), bradycardia (not tachycardia), hypotension and mydriasis.



[ Q: 1071 ] MRCPass - Endocrinology

A 35 year old woman has symptoms of constipation, dry skin and low moods. These symptoms have developed gradually over the past several months.

Her TFTs show :

TSH 0.01 (0.3-4.0)mU/l

Free T<sub>4</sub> 8.2 (10-24)pmol/l

low T<sub>3</sub> of 2.1 pmol/L

*What is the likely explanation?*

- 1- Sick euthyroid syndrome
- 2- Grave's thyroiditis
- 3- Iodine deficiency

- 4- Primary hypothyroidism
- 5- Secondary hypothyroidism

Answer & Comments

Answer: 5- Secondary hypothyroidism

Primary hypothyroidism is associated with increased TSH and low T<sub>4</sub> and T<sub>3</sub>. Secondary hypothyroidism is due to pituitary failure, resulting in low TSH, low T<sub>4</sub> and T<sub>3</sub>.

Sick euthyroid syndrome can cause low T<sub>3</sub> and T<sub>4</sub>, but in this case unlikely because there is no association with a critical illness.



[ Q: 1072 ] MRCPass - Endocrinology

A 50 year old man has recently had an MRI scan to investigate for bitemporal visual field loss. His pituitary gland is 15 mm in diameter. A glucose load of 100g orally fails to suppress human growth hormone levels.

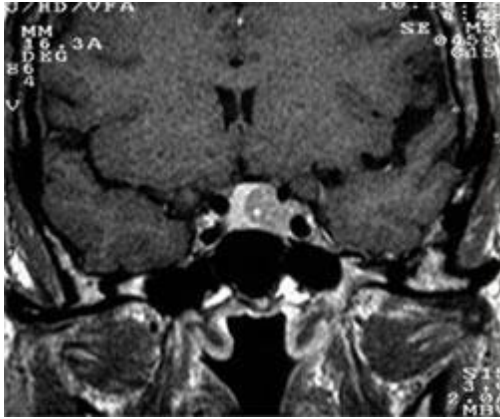
*Which one of the following is the best treatment?*

- 1- Transphenoidal adenectomy
- 2- Pituitary radiotherapy
- 3- Bromocriptine
- 4- Octreotide
- 5- Pegvisomant

Answer & Comments

Answer: 1- Transphenoidal adenectomy

The best treatment option for a large pituitary tumour in acromegaly is transphenoidal removal of the tumour. Octreotide (somatostatin analogue) and pegvisomant (Growth hormone receptor blocker) are effective forms of treatment. Bromocriptine (dopamine agonist) is less effective.



Pituitary tumour in acromegaly



## [ Q: 1073 ] MRCPass - Endocrinology

A 55 year old woman has weight loss, palpitations and diarrhoea. Examination reveals a goitre with a single nodule on the right lobe of the thyroid, about 3 cm in size. Thyroid scintigraphy with Tc 99 shows increased uptake within this nodule.

Thyroid function tests showed a free thyroxine of 30 pmol/L (9-25 pmol/L) and TSH <0.08 mU/L (0.5-5).

*What treatment should be recommended?*

- 1- Carbimazole
- 2- Propylthiouracil
- 3- Thyroidectomy
- 4- Prednisolone
- 5- Radioactive iodine

## Answer &amp; Comments

Answer: 5- Radioactive iodine

The thyroid uptake scan confirms that this lady's thyrotoxicosis is due to a solitary toxic nodule. Toxic thyroid nodules are best treated with radioactive iodine as this concentrates on the overactive adenoma cells. Radioiodine treatment is contraindicated in young children, pregnant and lactating women.



## [ Q: 1074 ] MRCPass - Endocrinology

A 50 year old man has progressive deafness. He also complains of aching in the legs and fatigue.

On examination, he has bowed legs and the legs feel warm.

*What is the most likely diagnosis?*

- 1- Osteosarcoma
- 2- Osteoarthritis
- 3- Bony metastases
- 4- Paget's disease
- 5- Primary hyperparathyroidism

## Answer &amp; Comments

Answer: 4- Paget's disease

Paget's disease is characterized by excessive breakdown of bone tissue. The new bone is structurally enlarged, but weakened and filled with new blood vessels.

Frequently, bones of the pelvis, leg, spine, arm, or the collar bone are involved. The effect on the skull may enlarge head size and cause hearing loss, if the cranial nerves are damaged by the bone growth.

Fractures can occur. Other symptoms include bone pain, bowing of the legs, neck pains, headaches and deafness.

Deafness may occur not just due to nerve compression, but also secondary to pagetic involvement of the bony ossicles.



Bowed Tibia in Paget's disease

**[ Q: 1075 ] MRCPass - Endocrinology**

A 40 year old man presents with chronic diarrhoea. He is suspected of having the VIPOMA syndrome.

*Which one of the following is a recognised feature?*

- 1- Weight gain
- 2- Metabolic alkalosis
- 3- Hypokalaemia
- 4- Hypoglycaemia
- 5- Increased gastric acid secretion

**Answer & Comments**

**Answer:** 3- Hypokalaemia

VIPOMAs secrete vasoactive intestinal peptide (VIP) from a ganglioneuroma.

Features are:

- watery diarrhea
- hypochlorhydria
- hyperglycemia
- hypercalcemia
- flushing
- weight loss
- metabolic acidosis



CT scan showing a VIPOMA

**[ Q: 1076 ] MRCPass - Endocrinology**

A 42 year old lady presents with excessive weight gain, hirsutism and back pain. Examination shows blood pressure 180/105, kyphosis and proximal myopathy. Of note, her blood glucose is 9 mmol/l. A DEXA scan shows a T-score -3.5 and a Z-score -2.5.

*What is the diagnosis?*

- 1- Multiple endocrine neoplasia
- 2- Multiple myeloma
- 3- Adrenal adenoma
- 4- Pheochromocytoma
- 5- Medullary thyroid carcinoma

**Answer & Comments**

**Answer:** 3- Adrenal adenoma

The diagnosis is Cushing's syndrome due to the clinical features of insulin resistance and osteoporosis. Out of all the options, the best fit as a cause is adrenal adenoma.

**[ Q: 1077 ] MRCPass - Endocrinology**

A 45 year old man has type II diabetes and is on oral medication. He presents with vomiting and feels generally unwell.

On examination, his BP is 110/70 mmHg. He has a BM of 17.

Investigations reveal: urea 21 mmol/l  
creatinine 190 µmol/l  
HCO<sub>3</sub><sup>-</sup> 14 mmol/l  
lactate 6 (0.93-1.65) mmol/L  
pH 7.22

Urine dipstick - ketone -ve

*What is the likely cause of these findings?*

- 1- Chronic renal failure
- 2- Metformin
- 3- Gastroparesis induced vomiting
- 4- Renal tubular acidosis
- 5- Diabetic ketoacidosis

#### Answer & Comments

**Answer:** 2- Metformin

The patient has features of metabolic acidosis which is most likely to be due to lactic acidosis caused by metformin.



#### [ Q: 1078 ] MRCPass - Endocrinology

A 41 year old woman presents with significant abdominal pains and frequent diarrhoea. She has been previously investigated for infertility. Lansoprazole which was prescribed by her doctor helped to relieve her symptoms.

Investigations:

Haemoglobin 11.8 g/dl  
Calcium 2.78 mmol/l  
Albumin 41 g/l  
Phosphate 0.75 mmol/l  
CRP 11 mg/l  
Endoscopy multiple duodenal ulcers  
H. pylori negative

*What is the likely diagnosis?*

- 1- Ulcerative colitis
- 2- Coeliac disease

- 3- NSAID related stomach ulcers
- 4- Multiple endocrine neoplasia
- 5- Tropical sprue

#### Answer & Comments

**Answer:** 4- Multiple endocrine neoplasia

The likely diagnosis is MEN 1a. Gastrinoma may lead to duodenal ulceration and diarrhea. Parathyroid adenomas may cause hypercalcaemia. Infertility may be due to a prolactinoma.



#### [ Q: 1079 ] MRCPass - Endocrinology

A 40 year old has been on intensive care for 3 weeks following a difficult post operative period, but now is rehabilitating well.

Her TFT's show : TSH 3.0 (0.3-4) mU/l, Free T<sub>4</sub> 7.3 (8-24) pmol/l, T<sub>3</sub> of 2.7 (3.3- 5.5) pmol/l.

*Which diagnosis is the most likely explanation?*

- 1- Iodine deficiency
- 2- Sick euthyroid syndrome
- 3- Primary hypothyroidism
- 4- Secondary hypothyroidism
- 5- Thyrotoxicosis

#### Answer & Comments

**Answer:** 2- Sick euthyroid syndrome

Sick euthyroid is seen in unwell patients who are clinically euthyroid but have low levels of T<sub>3</sub> and T<sub>4</sub>. The syndrome is very common and, in fact, may be found in up to 70% of hospitalized patients. This is often why TFT's are not accurate on patients in ITU. The thyroid function tests should be repeated in a few weeks' time.



#### [ Q: 1080 ] MRCPass - Endocrinology

A 70 year old man is found with a

decreased conscious level. He has a blood glucose of 40 mmol/L (3.5-5.0).

Urinalysis reveals no ketosis or proteinuria, but there is 4+ glycosuria.

*What is the diagnosis?*

- 1- Insulinoma
- 2- Normal anion gap metabolic acidosis
- 3- Addison's disease
- 4- Hyperosmolar non ketotic coma
- 5- Diabetic ketoacidosis

#### Answer & Comments

Answer: 4- Hyperosmolar non ketotic coma

Hyperosmolar non ketotic coma is characterised by markedly raised blood sugar, often >50 mmol/L. There is no significant ketosis and acidosis.

It occurs in patients with Type 2 diabetes of middle age or older. Treatment should be with isotonic saline, low dose insulin and potassium replacement.



[ Q: 1081 ] MRCPass - Endocrinology

A 50 year old patient is being seen in the ophthalmology clinic for pre-proliferative retinopathy. He is a type II diabetic.

*Which one of the following is most likely to delay disease progression when treated?*

- 1- Soft exudates
- 2- Hypertension
- 3- Glycaemic control
- 4- Hypercholesterolaemia
- 5- Stop smoking

#### Answer & Comments

Answer: 2- Hypertension

Diabetic retinopathy occurs in both type 1 and type 2 diabetes. Progression may be slowed by improving glycaemic and hypertensive

control, but hypertensive control has been shown to be more effective at reducing progression (UKPDS). There are no data at present suggest Statin therapy reduces disease progression. Soft exudates are a feature of preproliferative diabetic retinopathy.



[ Q: 1082 ] MRCPass - Endocrinology

A 70 year woman with low bone densitometry readings is currently taking Raloxifene.

*What form of drug is Raloxifene?*

- 1- Selective estrogen receptor modulator (SERM)
- 2- Anti interferon antibody
- 3- Corticosteroid
- 4- Hormone replacement therapy
- 5- Bisphosphonate

#### Answer & Comments

Answer: 1- Selective estrogen receptor modulator (SERM)

Selective estrogen receptor modulators (SERMs) exhibit a pharmacologic profile characterized by estrogen agonist activity in some tissues with estrogen antagonist activity in other tissues. The first widely used SERM, tamoxifen, has estrogen antagonist activity in breast tissue but shows estrogen-like activity in other tissues. Raloxifene is another SERM in clinical use, and it was developed to avoid some of the undesirable estrogen agonist actions of other SERMs to improve the drug safety profile.

Raloxifene has been introduced for clinical use in treatment and prevention of postmenopausal osteoporosis.



[ Q: 1083 ] MRCPass - Endocrinology

A 65 year old woman has been

prescribed thyroxine 150 µg daily following a diagnosis of hypothyroidism.

Having had replacement for several weeks, her investigations revealed:

serum total T4 concentration 65 nmol/L (55 - 145)

serum total T3 concentration 0.7 nmol/L (0.9 - 2.5)

serum TSH concentration 15 mU/L (0.5 - 4)

*What should be done?*

- 1- Thyroid uptake scan
- 2- No action as it will resolve
- 3- Measurement of free T4 levels
- 4- Check anti thyroid antibodies
- 5- Enquire about compliance

#### Answer & Comments

Answer: 5- Enquire about compliance

Non compliance would explain the thyroid function tests. The patient may have taken thyroxine prior to coming for investigation, hence a normal T4 but low T3 concentration.



#### [ Q: 1084 ] MRCPass - Endocrinology

A 55 year old man presents with lethargy and dizziness upon standing. He gives a history of having had treatment for tuberculosis when he was a child.

On examination he looks thin, his skin is pigmented and there is pigmentation of his buccal mucosa and pigmentation of the palmar creases. There is no vitiligo. His blood pressure is 120/80 lying and 85/60 on standing.

His blood urea 8.4 mmol/L, Na 122 mmol/L, K 5.7 mmol/L.

*Which of the following investigations is most likely to identify the condition?*

- 1- Short synacthen test
- 2- 0900 ACTH level

- 3- MRI pituitary
- 4- 24 hour urine catecholamines
- 5- Serum aldosterone /plasma renin activity

#### Answer & Comments

Answer: 1- Short synacthen test

The patient has Addison's disease, predisposed to by previous adrenal tuberculosis. The synacthen test is used to test adrenal reserve. Synacthen is tetracosactrin, the first 24 amino acids of ACTH.

The short synacthen test is done by:

- 1) take a basal sample for cortisol at time 0 min.
- 2) give 250 microgramme Synacthen i.v. or i.m.
- 3) sample for cortisol are taken at 30 mins. There should be a significant response unless the patient is Addisonian.



#### [ Q: 1085 ] MRCPass - Endocrinology

A 32 year old woman has been treated for depression. She now complains of thirst and drinking excessive amounts of water. At the end of an 8 hour water deprivation test, she has a serum osmolality of 290 mosmol/kg and urine osmolality of 100 mosmol/kg.

DDAVP (20µg intra-nasally) was given once these results were seen, and her repeat urine osmolality was 95 mosmol/kg.

*What is the likely diagnosis?*

- 1- Cranial diabetes insipidus
- 2- Nephrogenic diabetes insipidus
- 3- SIADH
- 4- Ectopic ACTH secretion
- 5- Psychogenic polydipsia



## Answer &amp; Comments

**Answer:** 2- Nephrogenic diabetes insipidus

The clinical picture is possibly drug induced (lithium) nephrogenic diabetes insipidus since there is a history of depression. The plasma osmolality normal range is 278-300 mosmol/kg and urine osmolality normal range is 350-1000 mosmol/kg. Hence she has inappropriately dilute urine despite water deprivation.

At the end of the water deprivation, it is not possible to tell whether it is cranial or nephrogenic unless she is given a test dose of DDAVP. If she starts concentrating the urine (response to the synthetic ADH) then it is likely to be cranial DI. If she still does not respond, as in this case, then it is likely to be nephrogenic DI.



## [ Q: 1086 ] MRCPass - Endocrinology

A 45 year old lady has recently been diagnosed as a diabetic. Despite strict diet control, her blood sugars are running at 12 mmol/l. She weighs 80kg.

*Which of the following is the best medication to start with?*

- 1- Insulin
- 2- Glibenclamide
- 3- Metformin
- 4- Troglitazone
- 5- Gliclazide

## Answer &amp; Comments

**Answer:** 3- Metformin

Metformin is a biguanide. It improves insulin sensitivity and is helpful especially in patients who are overweight as it does not stimulate appetites in the way that sulphonylureas do.



## [ Q: 1087 ] MRCPass - Endocrinology

A 45 year old man has newly diagnosed Conn's syndrome biochemically.

*What is the most common cause of Conn's syndrome in the UK?*

- 1- Adrenocortical carcinoma
- 2- Adrenocortical adenoma
- 3- Pheochromocytoma
- 4- MEN 1
- 5- MEN 2

## Answer &amp; Comments

**Answer:** 2- Adrenocortical adenoma

Conn's syndrome is most often caused by an adrenocortical adenoma.



## [ Q: 1088 ] MRCPass - Endocrinology

A 32 year old patient with type 1 diabetes has now pregnant and is being assessed in the diabetic clinic.

*Which one of the following is the most important?*

- 1- Tight glycaemic control
- 2- Tight hypertensive control
- 3- Manage only on oral hypoglycaemics
- 4- Anticoagulation with low molecular weight heparin
- 5- Dipstick urine for ketonuria

## Answer &amp; Comments

**Answer:** 1- Tight glycaemic control

Tight glycaemic control and close monitoring with HbA1c is essential in view of complications, including worsening diabetic retinopathy. Many patients go on to insulin rather than stay on oral hypoglycaemics.



## [ Q: 1089 ] MRCPass - Endocrinology

A 50 year old lady complains of fevers, headache, tremor and palpitations. On examination she has a BP of 220/110 mmHg, a pulse rate of 120 and glycosuria. 24 hour urinary vanillyl mandelic acid is measured at 85 micromoles/ 24h (normal 5-35 micromoles/24 h).

*The hypertension should be treated with:*

- 1- Clonidine
- 2- Methyl dopa
- 3- Propranolol before phenoxybenzamine
- 4- Phenoxybenzamine before propranolol
- 5- Bisoprolol

## Answer &amp; Comments

**Answer:** 4- Phenoxybenzamine before propranolol

The diagnosis is pheochromocytoma. The treatment of hypertension in pheochromocytoma is with alpha blockade prior to beta blockade. Alpha blockade reverses the peripheral vasoconstriction whereas beta blockade prevents tachycardia. The preferred  $\alpha$ -blocker phenoxybenzamine, as is not a selective alpha 1 blocker but an irreversible  $\alpha$ -blocker whose effects cannot be overcome by an increase of catecholamines.



## [ Q: 1090 ] MRCPass - Endocrinology

A 15 year old girl presents to the casualty with lethargy, malaise, polyuria and polydipsia. She has lost 1 stone in weight over

the past 3 months. Her BM was 23. Her ABG showed a pH 7.28, HCO<sub>3</sub> 16 mmol/l. Plasma ketones are negative.

*What is the likely diagnosis?*

- 1- Diabetic ketoacidosis
- 2- Addison's disease
- 3- Hypothyroidism
- 4- Hyperparathyroidism
- 5- Hyper osmolar ketotic coma

## Answer &amp; Comments

**Answer:** 1- Diabetic ketoacidosis

Ketonuria may not be present at the early stage of diabetic ketoacidosis. Some laboratories can only detect a specific type of ketone (acetoacetate) and the major ketone present in DKA is betahydroxybutyrate.



## [ Q: 1091 ] MRCPass - Endocrinology

A 25 year old patient has a father who has previously been diagnosed with medullary thyroid carcinoma, hyperparathyroidism and pheochromocytoma. The patient has been screened genetically and has the same gene predisposing to the condition.

*Which of the following is the most appropriate management strategy?*

- 1- Bilateral adrenalectomy and lifelong steroid replacement
- 2- MRI of the brain
- 3- Thyroidectomy and regular 24 hour urine for catecholamines
- 4- No further action unless symptomatic
- 5- Parathyroidectomy and bilateral adrenalectomy

## Answer &amp; Comments

**Answer:** 3- Thyroidectomy and regular 24 hour urine for catecholamines

The condition is MEN 2. Since medullary thyroid carcinoma is incurable, prophylactic thyroidectomy is advised before disease progression. However, bilateral adrenalectomy is not necessary until there is evidence for pheochromocytoma development.



[ Q: 1092 ] MRCPass - Endocrinology

A 45 year old woman has been referred for investigation of abnormal liver function tests. She drinks 40 units of alcohol a week. On examination she is obese with mainly truncal obesity, with a moon face and a buffalo hump shaped deposit of fat across her shoulders. Her face is plethoric and there are numerous telangiectasia.

The abdomen is protuberant and there are striae.

*What is the likely diagnosis?*

- 1- Adrenal adenoma
- 2- Pituitary dependent Cushings
- 3- Alcoholic pseudocushings
- 4- Ectopic ACTH secretion
- 5- Steroid use

Answer & Comments

Answer: 3- Alcoholic pseudocushings

The diagnosis is alcoholic pseudocushings, in which ACTH, cortisol levels and dynamic testing should not be abnormal.



[ Q: 1093 ] MRCPass - Endocrinology

A 18 year old man has poorly developed secondary sexual characteristics. He complains of a poor sense of smell. On examination, he has little axillary or pubertal hair, a small penis and testicular volumes of approximately 4 ml bilaterally.

Investigations reveal:

Testosterone 3 nmol/L (10-30)

Prolactin 360 mU/L (<450)

FSH 2.5 iu/L (1-7)

LH 1.9 iu/L (1-10)

*What is the most likely diagnosis?*

- 1- 21 hydroxylase deficiency
- 2- 17 hydroxylase deficiency
- 3- Testicular feminisation syndrome
- 4- Kallman's syndrome
- 5- Adrenal adenoma

Answer & Comments

Answer: 4- Kallman's syndrome

Kallman's syndrome describes the occurrence of hypothalamic gonadotrophin releasing hormone deficiency and deficient olfactory sense - hyposmia or anosmia. It is usually inherited as an X-linked or autosomal recessive disorder with greater penetrance in the male. Nerve deafness, colour blindness, mid-line cranio-facial deformities, and cryptorchidism also occur.



[ Q: 1094 ] MRCPass - Endocrinology

A 17 year old boy was seen at the clinic for investigation of gynecomastia. On examination, he was unusually tall, mildly overweight, he had gynecomastia and hypoplastic testes.

*What is the likely genetic karyotype?*

- 1- 46 XO
- 2- 46 XY
- 3- 46 XX
- 4- 47 XYY
- 5- 47 XXY

Answer & Comments

Answer: 5- 47 XXY

This is the karyotype of Klinefelter's syndrome.

Boys with Klinefelter's syndrome often show very discrete clinical features, including tall stature, obesity, gynecomastia and eunuchoid habitus, therefore the syndrome is often not diagnosed. In addition, they have small testes, a normal to low testosterone level and are infertile.



[ Q: 1095 ] MRCPass - Endocrinology

A 20 year old lady with polycystic ovary syndrome was prescribed Metformin.

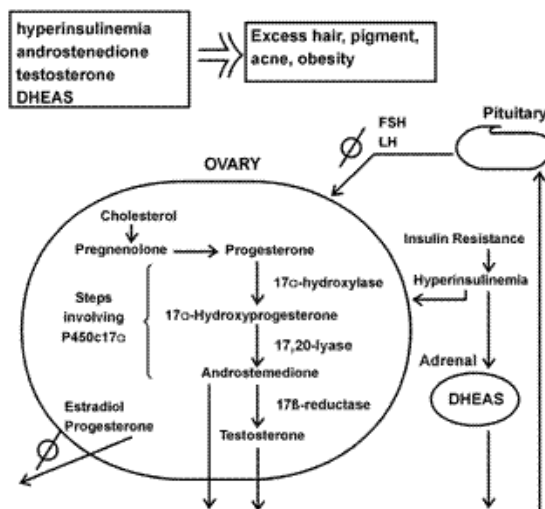
*How does metformin work in the condition?*

- 1- Increasing oestradiol levels
- 2- Increasing follicle stimulating hormone levels
- 3- Increasing gluconeogenesis
- 4- Increasing insulin levels
- 5- Increasing peripheral glucose uptake

Answer & Comments

Answer: 5- Increasing peripheral glucose uptake

Within the context of PCOS, metformin decreases hyperinsulinism and increases peripheral glucose uptake, reduces plasma levels of luteinizing hormone (LH), and reduces ovarian androgen production.



[ Q: 1096 ] MRCPass - Endocrinology

A 35 year old lady has complained of syncopal episodes. She has had one previous documented BM of 2.6.

*Which of the following is the most appropriate investigation?*

- 1- 24 hour tape recording
- 2- Oral glucose tolerance test
- 3- Insulin tolerance test
- 4- 72 hour fast with insulin, C peptide and plasma glucose sent when BM < 4
- 5- MRI of brain

Answer & Comments

Answer: 4- 72 hour fast with insulin, C peptide and plasma glucose sent when BM < 4

The diagnosis is likely to be an insulinoma. Hypoglycaemic attacks are likely to be witnessed during a 72 hour fast. Insulin and C peptide levels are high, whilst glucose is low. Sulphonylurea levels are also sent in cases where oral hypoglycaemic drug misuse is suspected.



[ Q: 1097 ] MRCPass - Endocrinology

A 35 year old woman had no menstrual periods for the past 6 months. She is not pregnant and has not been on any medication. Within the past week, she has noted milk production from her breasts. She has also had headaches for several months.

*Which of the following laboratory test findings is most likely to be present?*

- 1- High prolactin level
- 2- Hypocalcaemia
- 3- High serum cortisol
- 4- Low serum growth hormone
- 5- High free thyroxine

## Answer &amp; Comments

**Answer:** 1- High prolactin level

The headache and visual disturbance suggests a macroadenoma. This could be prolactinoma or acromegaly. The presence of galactorrhoea and menstrual disturbance suggests high prolactin levels. Levels of prolactin >3000 mU/L would be expected in macroprolactinoma, and levels above 6000 mU/L are diagnostic. Prolactinomas are the commonest functioning pituitary tumours.



[ Q: 1098 ] MRCPass - Endocrinology

A 25 year old man is investigated for cryptorchidism. He has a cleft palate and colour blindness. He is of normal stature. LH is 0.2 mIU/ml(2-18) and FSH is 1.2 mIU/ml(2-18).

*Which one of the following is the likely diagnosis?*

- 1- Testicular feminisation syndrome
- 2- Kallmann's syndrome
- 3- Marfan's syndrome
- 4- Klinefelter's syndrome
- 5- Congenital adrenal hyperplasia 17 progesterone form

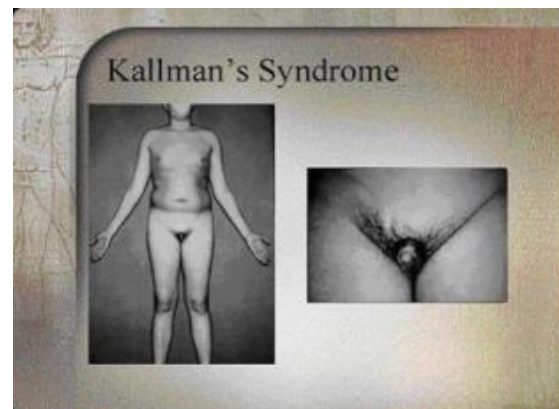
## Answer &amp; Comments

**Answer:** 2- Kallmann's syndrome

Kallman's syndrome describes the occurrence of hypothalamic gonadotrophin releasing hormone deficiency and deficient olfactory sense - anosmia. It is usually inherited as an X-linked or autosomal recessive disorder with greater penetrance in the male. Gonadotrophin deficiency arises from a failure of embryonic migration of GnRH secreting neurons from their site of origin in the nose.

More than half of patients have associated nerve deafness, colour blindness, mid-line cranio-facial deformities such as cleft palate or harelip, and renal abnormalities. Most are of

normal or above average stature. Females may present with primary amenorrhoea; males with cryptorchidism. LH and FSH levels are typically low .



[ Q: 1099 ] MRCPass - Endocrinology

A 45 year old woman has a 2 year history of treated hypothyroidism. There was a short history of weight loss.

On examination she had a temperature of 37.7 C, a blood pressure of 85/35 mmHg. She also had vitiligo.

*Which one of the following should be given intravenously initially?*

- 1- Cefuroxime
- 2- 10% dextrose infusion and insulin
- 3- T3
- 4- Fludrocortisone
- 5- Hydrocortisone

## Answer &amp; Comments

**Answer:** 5- Hydrocortisone

The diagnosis is Addison's disease. Many of the presenting signs and symptoms are nonspecific. Patients with mineralocorticoid insufficiency may show signs of sodium and volume depletion (eg, orthostatic hypotension, tachycardia). Hydrocortisone 100 mg or 200 mg IV should be given, and continued as a QDS dose. Fluid replacement with dextrose is also recommended. Following that, fludrocortisone acetate



(mineralocorticoid) 0.1 mg qds should also be given.



[ Q: 1100 ] MRCPass - Endocrinology

A 70 year old man presents with significant back pains and lethargy, and associated polydipsia.

His investigations show :

Haemoglobin 10.7 g/dl

Urea 18.5 mmol/l

Creatinine 320 micromol/l

Calcium 3.46 mmol/l

Albumin 32 g/l

Total protein 98 g/l

Thoracic spine X rays show collapse of T7-T8 vertebrae.

*Which investigation is most likely to confirm diagnosis?*

- 1- Blood film
- 2- Ultrasound of the liver
- 3- Parathyroid hormone levels
- 4- Serum electrophoresis
- 5- Creatinine Clearance

Answer & Comments

Answer: 4- Serum electrophoresis

The diagnosis is multiple myeloma, which is suggested by the hypercalcaemia (polydipsia and polyuria), renal failure and pathological thoracic vertebral fractures.



[ Q: 1101 ] MRCPass - Endocrinology

A 50 year old man presents with a 6 month history of severe headaches. He has a history of hypertension and osteoarthritis. On examination, he has coarse facial features with a prominent jaw . Visual fields demonstrate bi-temporal hemianopia. BP 145/105 mmHg and glycosuria.

Blood tests show :

Glucose 7.5 mmol/L (3.5 -6.5)

LH 2.8 U/L (0.7 - 6)

FSH 5.3 U/L (<6)

Prolactin 320 mU/L (<425)

Testosterone 13.2 nmol/L (10-35)

GH 7 mU/L (<10)

Cortisol random 523 nmol/L (250-700)

TSH 2.8 mU/L (0.3-6)

FT4 17.5 pmol/L (9.4 -25)

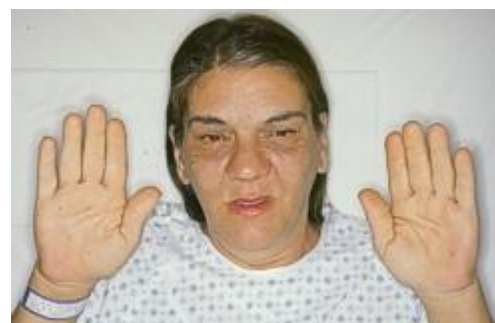
*What is the most likely underlying diagnosis?*

- 1- Macroprolactinoma
- 2- Conn's syndrome
- 3- ACTH secreting tumour
- 4- Sheehan's syndrome
- 5- Acromegaly

Answer & Comments

Answer: 5- Acromegaly

The clinical picture is consistent with acromegaly, there is impaired glucose tolerance, hypertension and enlarged pituitary causing bitemporal hemianopia.



Enlarged hands and coarse facial features in Acromegaly



[ Q: 1102 ] MRCPass - Endocrinology

A 40 year old patient with Addison's disease is intolerant of her hydrocortisone treatment which she takes at a dose of 20mg in the morning and 10mg in the evening.



*Which one of the following doses of prednisolone would provide an equivalent daily dose?*

- 1- 2 mg
- 2- 5 mg
- 3- 7.5 mg
- 4- 10 mg
- 5- 20 mg

#### Answer & Comments

Answer: 3- 7.5 mg

Total dose of hydrocortisone is 30mg. The equivalent ratio of prednisolone: hydrocortisone is 1:4. Hence  $30/4 = 7.5$  mg. The ratio for dexamethasone: hydrocortisone is 1:40.



[ Q: 1103 ] MRCPass - Endocrinology

A 45 year old woman complains of paraesthesiae in her hands following a thyroidectomy. She has spasms in her hands.

*What blood test is most useful in this situation?*

- 1- Thyroid function test
- 2- Magnesium
- 3- Calcium
- 4- Potassium
- 5- Sodium

#### Answer & Comments

Answer: 3- Calcium

This patient has hypoparathyroidism post thyroidectomy, leading to hypocalcaemia. Treatment is with calcium and calcitriol supplementation. Signs are tetany, carpal spasm and Chvostek's sign.



[ Q: 1104 ] MRCPass - Endocrinology

A 65 year old man presents with

lethargy and weight loss. This has gradually occurred over the last 6 months.

On examination, a small goitre is palpable. There is no evidence of eye signs or pretibial myxedema.

Investigations reveal :

Free T<sub>4</sub> of 21.1 (9.8-23) pmol/l

T3 of 5.3 (3.3-5.5) pmol/l

a TSH of 0.05 (0.1-5) mU/l

Thyroid autoantibody titres are all negative

A thyroid uptake scan shows patchy uptake

*What is the diagnosis?*

- 1- Sick euthyroid syndrome
- 2- Toxic nodule
- 3- Grave's disease
- 4- Hashimoto's thyroiditis
- 5- De Quervain's thyroiditis

#### Answer & Comments

Answer: 2- Toxic nodule

This patient has subclinical hyperthyroidism. Grave's disease is unlikely due to negative antithyroid antibodies. This is because the T<sub>4</sub> and T<sub>3</sub> levels are normal. However, the TSH is reduced, so the hyperthyroidism is subclinical.

Toxic multinodular goiter or toxic nodule is more common in the elderly. Very recently, activating point mutations in the TSH receptor, which result in continuous thyroid stimulation, have been described in the solitary nodule. It can cause hyperthyroidism or subclinical hyperthyroidism.

In patients with multinodular goitre, the thyroid uptake scan (with radioactive iodine) usually reveals patchy uptake, with areas of both increased and decreased uptake. Patients with Graves disease usually have homogeneous diffuse uptake. Glands with thyroiditis have low uptake.

Sick Euthyroid syndrome is usually associated with critically ill patients. Hashimoto's and De Quervain's thyroiditis are usually associated with hypothyroidism.



[ Q: 1105 ] MRCPass - Endocrinology

A 35 year old type 1 Diabetic patient presents to the clinic for review . Her urine dipstick show s blood +, protein ++, leucocytes - . HbA1c is 8.2.

*Which drug, when commenced, will have an impact on mortality?*

- 1- Insulin
- 2- Metformin
- 3- Lisinopril
- 4- Gliclazide
- 5- Bendrofluazide

Answer & Comments

Answer: 3- Lisinopril

ACE inhibitors have been shown to be of benefit in diabetic nephropathy - with an improved mortality outcome in the long term.



[ Q: 1106 ] MRCPass - Endocrinology

A 70 year lady has lethargy and is investigated at the hospital. Her investigations reveal:

Corrected calcium 2.86 (2.2-2.6) mmol/l

Phosphate 0.80 (0.81-1.4) mmol/l

Alkaline phosphatase 120 U/L (20-95)

PTH concentration 5.8 pmol/L (0.9-5.4)

*What is the likely diagnosis?*

- 1- Primary hyperparathyroidism
- 2- Multiple myeloma
- 3- Osteoporosis
- 4- Paget's disease
- 5- Ectopic PTH related peptide (PTHrp) secretion

Answer & Comments

Answer: 1- Primary hyperparathyroidism

The disorder is relatively common disorder amongst elderly females. In primary hyperparathyroidism, typically there is hypercalcaemia, low phosphate and raised alkaline phosphatase. PTH acts directly on kidney (glomerular  $\text{Ca}^{++}$  resorption) and bone  $\text{Ca}^{++}$  resorption (rate of dissolution of bone mineral) and indirectly on intestine via control of vit D derivative 1-alpha-25-(OH) $_2$ D (calcitriol) synthesis in the kidney. Levels of PTH are regulated by a classic feedback loop

Incidence of primary hyperparathyroidism is 1:800.

Causes include :

Adenomas (single 80%)

Parathyroid hyperplasia

Parathyroid carcinomas (2-3% cases)



[ Q: 1107 ] MRCPass - Endocrinology

A 55 year old man has large spade like hands and finds that he is having to buy shoes of increasing size. On examination of his visual fields, bitemporal hemianopia was found.

*Which one of the following tests should be done?*

- 1- Insulin tolerance test
- 2- Hydrocortisone curve
- 3- CT scan of the chest
- 4- Dexamethasone suppression test
- 5- Oral glucose tolerance test with growth hormone

Answer & Comments

Answer: 5- Oral glucose tolerance test with growth hormone

Growth hormone suppression during oral glucose tolerance and elevated IGF-I levels form the main diagnostic criteria in acromegaly. An MRI scan (to look for macroadenoma) is also important.



[ Q: 1108 ] MRCPass - Endocrinology

A 8 year old boy is investigated for short stature. He has short limbs, trunk and saddle shaped nose. X rays reveal epiphyseal dysplasia.

*What is the diagnosis?*

- 1- Achondroplasia
- 2- Paget's disease
- 3- X linked hypophosphataemic rickets
- 4- Congenital adrenal hyperplasia
- 5- Congenital osteoporosis

Answer & Comments

Answer: 1- Achondroplasia

Achondroplasia is an autosomal dominant condition which is one of commonest forms of inherited dwarfism.

Epiphyseal dysplasia occurs and there is a diminished columnar arrangement short thick bones, spinal length almost always normal. Features include short limbs, trunk, large head, saddle nose and exaggerated lumbar lordosis.



Achondroplasia



[ Q: 1109 ] MRCPass - Endocrinology

A 45 year old man has a blood pressure of 180/105 mmHg found by the GP and was referred for further investigation.

Blood tests show :

serum sodium 144 mmol/L (135-145)

potassium 2.5 mmol/L (3.5-5.0)

chloride 102 mmol/L (95-105)

glucose 5.3 mmol/L (3.5-5.5)

creatinine 100 umol/L (70-110)

His plasma renin activity is 0.1 ng/mL/hr and serum aldosterone is 680 pmol/L (100-500).

*Which is the best drug to prescribe?*

- 1- Atenolol
- 2- Lisinopril
- 3- Bendrofluazide
- 4- Spironolactone
- 5- Losartan

Answer & Comments

Answer: 4- Spironolactone

Primary hyperaldosteronism (Conn's syndrome due to a single adenoma), responds

well to Spironolactone 200-400 mg. ACE inhibitor and angiotensin II antagonists can also be used. The definitive treatment however is surgery.



[ Q: 1110 ] MRCPass - Endocrinology

A 22 year old girl complains of feeling tired for the last 6 months. She also has generalized abdominal discomfort and poor bowel movement. Examination shows a pale and thin young woman. Her blood pressure is 110/60 mmHg.

Investigations reveal:

Hb 13.6 g/l

WBC  $3.2 \times 10^9/L$

Platelet  $230 \times 10^9/L$

ESR 25 mm/hr

Na 132 mmol/l

K 2.6 mmol/l

Urea 4 mmol/l

Creat 80  $\mu\text{mol/l}$

Bicarbonate 35 mmol/l

alkaline phosphatase 85 iu/l (50-110)

bilirubin 14 ( $0-17$ )  $\mu\text{mol/l}$

AST 35 iu/l (5-40)

Albumin 32g/l

*Which one of the following is the likely underlying diagnosis?*

- 1- Pheochromocytoma
- 2- Conns syndrome
- 3- Diabetes type 1
- 4- Anorexia nervosa
- 5- Addisons disease

Answer & Comments

Answer: 4- Anorexia nervosa

A low sodium, potassium and metabolic alkalosis can be due to self induced vomiting.

Hence the clinical picture is most consistent with anorexia nervosa.



[ Q: 1111 ] MRCPass - Endocrinology

A 65 year old man presents with chest pain. His ECG shows anterior ST elevation and he is thrombolysed with tenecteplase. He has a history of type 2 diabetes and has a BM of 15 on admission. His HbA1c is 10%.

*Which one of the following is the most appropriate therapy?*

- 1- Maximise gliclazide dose
- 2- Metformin
- 3- Pioglitazone
- 4- Sliding scale insulin
- 5- 5% dextrose

Answer & Comments

Answer: 4- Sliding scale insulin

In diabetics who have had an MI, the DIGAMI study showed that intravenous insulin for 24 hours and subcutaneous insulin for 3 months improved mortality rates for up to 3 years after.



[ Q: 1112 ] MRCPass - Endocrinology

A 25 year old woman has polydipsia and polyuria. She has had no history of diabetes, but had a history of head injury several years ago.

Investigations reveal:

sodium 155 (135-145)mmol/l

potassium 4.5 (3.5-4.9)mmol/l

calcium 2.35 (2.2-2.6)mmol/l

glucose 4.6 (3.0-6.0)mmol/l

*Which one of the following is most likely to confirm the diagnosis?*

- 1- Oral glucose tolerance test
- 2- Water deprivation test

- 3- Calcium levels
- 4- ADH levels
- 5- Trial of low dose DDAVP

#### Answer & Comments

**Answer:** 2- Water deprivation test

With the history of head injury, she may have had pituitary damage causing cranial diabetes insipidus, which may have manifested late. A high sodium level is consistent with this. A water deprivation test would help confirm this, and challenge with DDAVP at the end of the test may help to distinguish between cranial and nephrogenic diabetes insipidus.



#### [ Q: 1113 ] MRCPass - Endocrinology

A 50 year old man presents with episodes of sweating and tremors, which are relieved by glucose. He has gained 1 stone of weight in the past 2 months and drinks approximately 10 units of alcohol weekly.

His investigations show normal full blood count, normal urea and electrolytes and a fasting plasma glucose concentration of 3.8 mmol/l (3-6).

*What is the next most appropriate investigation ?*

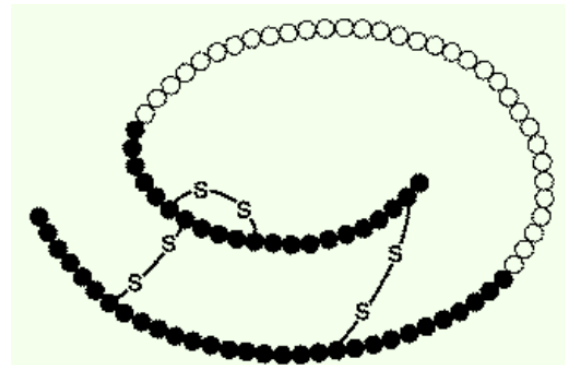
- 1- Insulin tolerance test
- 2- CT scan of pancreas
- 3- Insulin and C-peptide concentration
- 4- 24 hour urine catecholamines
- 5- Glucose tolerance test

#### Answer & Comments

**Answer:** 3- Insulin and C-peptide concentration

If insulin and C-peptide levels both are increased during a hypoglycaemic episode, then insulinoma would be the cause. If the C-peptide level was not raised but insulin level

is, then exogenous insulin use may be the cause.



Insulin is derived from proinsulin (pictured) by cleavage of the C-peptide structure (in blank circles)



#### [ Q: 1114 ] MRCPass - Endocrinology

An 23 year old woman presents with a history of 10 kg weight loss in the previous 6 months. She had menstruated only once during this time. On examination she had fine lanugo hair. She has a blood pressure of 110/60 mmHg.

*Which one of the following would support the likely clinical diagnosis?*

- 1- Suppressed thyroid stimulating hormone concentration
- 2- High plasma follicle stimulating hormone concentration
- 3- Normal plasma cortisol concentration
- 4- Low plasma testosterone concentration
- 5- High SHBG concentration

#### Answer & Comments

**Answer:** 3- Normal plasma cortisol concentration

The likely diagnosis is anorexia nervosa. Weight loss and oligomenorrhoea are associated features. FSH and LH concentrations are usually low. TSH and testosterone levels can be high. A normal cortisol level would be consistent.



## [ Q: 1115 ] MRCPass - Endocrinology

A 45 year old lady presents with lethargy, constipation and headaches. He has a previous medical history of gastrinoma diagnosed. Her calcium is 2.85 mmol/l, phosphate is 0.6 mmol/l and PTH is 10.3 pmol/l (0.8-8.0).

*Which of the following is the likely diagnosis?*

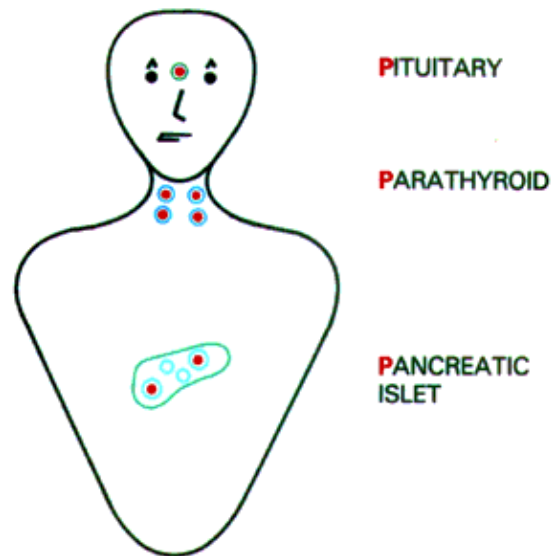
- 1- Lung cancer
- 2- Secondary hyperparathyroidism
- 3- MEN type I
- 4- Adrenal tumour
- 5- Medullary thyroid carcinoma

## Answer &amp; Comments

Answer: 3- MEN type I

She has a high calcium, low phosphate and raised PTH. The headaches could be caused by a pituitary tumour. In association with a pancreatic tumour (gastrinoma) and parathyroid gland tumour, MEN I is the most likely diagnosis. Diagnosis of gastrinoma is made on the basis of a high fasting plasma gastrin, high gastric acid secretion or a demonstrable pancreatic or gastrointestinal tumour - by CT or venous sampling for gastrin.

### MULTIPLE ENDOCRINE NEOPLASIA TYPE I



## [ Q: 1116 ] MRCPass - Endocrinology

A 30 year old man has a recent history of head injury. Having recovered for several weeks, he is now increasingly lethargic.

His investigations show :

Sodium 158 (133-145) mmol/l

Potassium 4.2 (3.5 - 5)mmol/l

Chloride 118 (100 - 112)mmol/l

Urea 6.0 (3 - 7)μmol/l

Creatinine 85 (50 - 100)μmol/l

Urine Osmolality 80 mosmol/kg (50-1200) mosmol/kg

*What is the diagnosis?*

- 1- Addison's disease
- 2- Syndrome of inappropriate antidiuretic hormone secretion (SIADH)
- 3- Diabetes insipidus
- 4- Diabetes mellitus
- 5- Hyperchloraemic metabolic acidosis

## Answer &amp; Comments

Answer: 3- Diabetes insipidus



The likely cause of this presentation is Diabetes Insipidus. Urine osmolality is low and there is hypernatraemia. Diabetes insipidus can occur in patients with pituitary damage (in this example from head injury) because of insufficient anti diuretic hormone secretion.



[ Q: 1117 ] MRCPass - Endocrinology

A 55 year old woman was found by the ophthalmologist to have bitemporal hemianopia and headaches. MRI scan shows a pituitary tumour.

*Which one of the following is the best investigation to confirm the diagnosis of acromegaly in this patient?*

- 1- Insulin-like growth factor-1 (IGF-1)
- 2- Glucose tolerance test with growth hormone concentrations
- 3- An insulin tolerance test with growth hormone concentrations
- 4- 9am growth hormone concentrations
- 5- Growth hormone releasing hormone test

Answer & Comments

Answer: 2- Glucose tolerance test with growth hormone concentrations

The diagnosis of acromegaly is confirmed by inadequate suppression of growth hormone concentrations below 2 mU/l in an oral glucose tolerance test.



[ Q: 1118 ] MRCPass - Endocrinology

A 35 year old woman has a thyroid goitre and complains of polyuria. Thyroid function tests were normal, but hypercalcaemia is noted. Her blood pressure is 155/105 mmHg. A chest radiograph is normal.

A thyroidectomy is performed, frozen sections of several thyroid masses show a malignant neoplasm composed of polygonal cells in nests. Immunoperoxidase staining of the sections is positive for calcitonin.

*The diagnosis is likely to be:*

- 1- Papillary thyroid carcinoma
- 2- Parathyroid hyperplasia
- 3- Multiple endocrine neoplasia type 2
- 4- Follicular thyroid carcinoma
- 5- Anaplastic thyroid carcinoma

Answer & Comments

Answer: 3- Multiple endocrine neoplasia type 2

Medullary thyroid cancer, hyperparathyroidism, and pheochromocytoma form part of the MEN 2 syndrome.

MEN 2a is associated with medullary thyroid carcinoma (MTC), parathyroid tumours (10-20%) and pheochromocytoma (20-50%).

MEN 2b is associated with presentation of medullary thyroid carcinoma, parathyroid tumours and pheochromocytoma + ganglioneuromatosis (pathognomonic), and marfanoid habitus.



[ Q: 1119 ] MRCPass - Endocrinology

A 25 year old patient has palpitations. She has lost 1 stone of weight over the past 3 months. On

examination, she has tremors in her hands and palmar erythema. Knee and ankle reflexes are brisk.

*What is the likely diagnosis?*

- 1- Acromegaly
- 2- Congenital adrenal hyperplasia
- 3- Pheochromocytoma
- 4- Benign essential tremor
- 5- Thyrotoxicosis

Answer & Comments

Answer: 5- Thyrotoxicosis

Recognised features of thyrotoxicosis are: Weight loss, Palpitations, Dyspnoea, Irritability, Psychosis, Tremor, Pruritus, Diarrhoea, Palmar erythema, Hypercalcaemia, Hyper-reflexia, Bone mineral loss and Alopecia.



[ Q: 1120 ] MRCPass - Endocrinology

A 30 year old lady has lethargy, fevers and palpitations. Her GP sends thyroid function which show a Free T<sub>4</sub> of 30 pmol/l and TSH of <0.01 mU/l. Her symptoms seem to spontaneously resolve 6 weeks later.

*Which one of the following is the most likely diagnosis?*

- 1- Multinodular goitre
- 2- Thyroid carcinoma
- 3- Grave's disease
- 4- Subacute thyroiditis
- 5- Iodine deficiency

Answer & Comments

Answer: 4- Subacute thyroiditis

Subacute thyroiditis is a transient thyroiditis which is thought to be of viral aetiology. There is a swollen painful thyroid gland with hyperthyroidism. This is usually followed by a period of hypothyroidism with raised TSH weeks later. Antithyroid medication is not effective. Steroids can be used in severe cases.

**Subacute Painless Thyroiditis (Silent)**

- ♦ Commonly associated with women who are 3-6 months post-partum. Autoimmune etiology? Histologically - lymphocytic infiltrate w/o germinal centers. Lack of antithyroid antibodies (distinguish it from Hashimoto's), association with HLA-DR3.



[ Q: 1121 ] MRCPass - Endocrinology

A 40 year old woman has developed secondary amenorrhoea, headaches and bilateral galactorrhoea. She undergoes investigations for a suspected pituitary tumour. An MRI shows a 15 mm pituitary tumour.

*Which one of the following is the next most appropriate step?*

- 1- Skull X ray
- 2- Formal visual field testing
- 3- Transsphenoidal hypophysectomy
- 4- An oral glucose tolerance test
- 5- Octreotide treatment

Answer & Comments

Answer: 4- An oral glucose tolerance test

A macroadenoma (> 10mm) suggests a large tumour. Often this may turn out to be acromegaly or a macroprolactinoma and hence oral glucose tolerance test is useful.

Octreotide should be used only if acromegaly is confirmed, and Cabergoline for a macroprolactinoma.



[ Q: 1122 ] MRCPass - Endocrinology

A 33 year old lady has a painless thyroid nodule. Her mother had a similar condition after which she had surgery and thyroid replacement therapy.

Thyroid function tests show :

Free T<sub>4</sub> 8 (10-24) pmol/l

TSH 7 (0.3-4) mU/l

*What is the likely diagnosis?*

- 1- Single nodular goitre
- 2- Grave's disease
- 3- Dyshormonogenetic goitre
- 4- Hashimoto's thyroiditis
- 5- Papillary thyroid carcinoma

## Answer &amp; Comments

**Answer:** 4- Hashimoto's thyroiditis

Hashimoto's thyroiditis can be familial. Long standing thyroiditis leads to fibrotic changes which can lead to a palpable lump. Hypothyroidism is frequently associated. If there is lymphadenopathy, then papillary thyroid carcinoma should be considered. Dyshormonogenetic goitre is very rare and congenital. It tends to present in childhood / teenage years with hypothyroidism.



## [ Q: 1123 ] MRCPass - Endocrinology

A 55 year old man is under investigation for weakness of his legs, pigmentation of the skin, hypertension and glycosuria.

Results of serum cortisol estimations are:

Time	Cortisol
0900	1000 nmol/l
2400	1050 nmol/l

After 48 hours of dexamethasone 8 mgs daily:

Time	Cortisol
0900	1075 nmol/l

*What is the likely diagnosis?*

- 1- Renal tubular acidosis
- 2- Conn's syndrome
- 3- Acromegaly
- 4- Ectopic ACTH secretion
- 5- Panhypopituitarism

## Answer &amp; Comments

**Answer:** 4- Ectopic ACTH secretion

The patient has Cushing's syndrome with failure to suppress cortisol levels during the dexamethasone suppression test. This will indicate either an adrenal tumour or an ectopic source of ACTH.



## [ Q: 1124 ] MRCPass - Endocrinology

A 65 year old man has had type II diabetes for 5 years. He has been lethargic and undergone a series of tests which reveal that he has type IV renal tubular acidosis.

*Which one of the following should be used for treatment?*

- 1- Metyrapone
- 2- Lithium
- 3- Aminophylline
- 4- Fludrocortisone
- 5- Acetic Acid

## Answer &amp; Comments

**Answer:** 4- Fludrocortisone

Type 4 RTA is caused by a defect in the distal tubule, but it is different from classic distal RTA and proximal RTA because it results in hyperkalaemia rather than hypokalaemia. RTA type 4 is in effect hyporeninaemic hypoaldosteronism.

It occurs when blood levels of aldosterone are low or when the kidneys do not respond to it. Fludrocortisone is usually effective as a form of treatment.

Type IV RTA may result from may result from sickle cell disease, urinary tract obstruction, lupus, amyloidosis, or transplantation.



## [ Q: 1125 ] MRCPass - Endocrinology

A 45 year old man presents with a blood pressure of 180/95. He has a sodium of 149 mmol/l and potassium of 3.1 mmol/l.

*Which one of the following diagnosis is most likely?*

- 1- Pheochromocytoma
- 2- SIADH
- 3- 21-hydroxylase deficiency
- 4- Conn's syndrome

## 5- Addison's disease

## Answer &amp; Comments

Answer: 4- Conn's syndrome

Conn's syndrome is the result of mineralocorticoid excess due to an adrenal adenoma (60%) or bilateral hyperplasia (40%). A low potassium (< 3.5 mmol/L) accompanied by metabolic alkalosis is characteristic. Renin and aldosterone measurements may help to determine the diagnosis. There is autonomous aldosterone secretion in the presence of low or suppressed renin activity.



Conn's syndrome tumour



## [ Q: 1126 ] MRCPass - Endocrinology

A 65 year old man with diet controlled type 2 diabetes mellitus and a creatinine of 350 umol/l.

*Which of the following drugs should be avoided if possible?*

- 1- Isophane insulin
- 2- Actrapid insulin
- 3- Glimepiride
- 4- Gliclazide
- 5- Metformin

## Answer &amp; Comments

Answer: 5- Metformin

Metformin is a biguanide which acts by improving insulin sensitivity through mechanisms involving hepatic gluconeogenesis and improved muscle glucose

utilization. Thus, some insulin must be produced for it to have an effect. It is associated hypoglycaemia although this side effect is unusual. It is contraindicated in subjects with renal failure, hepatic failure and heart failure due to an association with lactic acidosis.



## [ Q: 1127 ] MRCPass - Endocrinology

A 52 year old female presents with a history of weight loss, tremor and increased sweating. Investigations reveal:

Free thyroxine 35 pmol/L (10-24)

TSH < 0.1 mU

This patient is treated with radioactive iodine.

*Which one of the following is an adverse effect of radioactive iodine therapy?*

- 1- Hyperthyroidism
- 2- Hypothyroidism
- 3- Goitre
- 4- Medullary thyroid carcinoma
- 5- Hypercalcaemia

## Answer &amp; Comments

Answer: 2- Hypothyroidism

The major complication of treatment with radioactive iodine is the progressive incidence of hypothyroidism and thyroid replacement may be necessary in the future.



## [ Q: 1128 ] MRCPass - Endocrinology

A 45 year old Type 1 diabetic has an annual checkup.

*Which one of the following fundoscopy findings warrants an urgent referral to the ophthalmologist?*

- 1- Photocoagulation scars
- 2- Vitreous haemorrhage
- 3- Peripheral microaneurysms
- 4- Hard exudates close to the macula

## 5- Blot haemorrhages

## Answer &amp; Comments

Answer: 2- Vitreous haemorrhage

Vitreous haemorrhage is a sign of proliferative diabetic retinopathy but may also occur with central retinal vein occlusion and age-related macular degeneration with breakthrough bleeding. Retinal detachment may occur and vision may be impaired.



Vitreous Haemorrhage in diabetes



## [ Q: 1129 ] MRCPass - Endocrinology

A 35 year old woman presented with vomiting. Blood tests reveal high parathyroid levels and hypercalcaemia.

*Which one of the following is most likely to have caused primary hyperparathyroidism?*

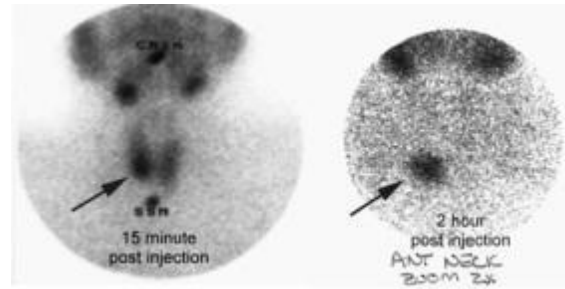
- 1- Medullary thyroid carcinoma
- 2- Parathyroid adenoma
- 3- Parathyroid carcinoma
- 4- Papillary thyroid carcinoma
- 5- Follicular thyroid carcinoma

## Answer &amp; Comments

Answer: 2- Parathyroid adenoma

Primary hyperparathyroidism can be caused by hyperplasia, carcinoma.

Adenomas are the most common, representing 80-85% of cases.



A Tc-MIBI exam demonstrating a parathyroid adenoma



## [ Q: 1130 ] MRCPass - Endocrinology

A 68 year old man presents with seizures. Past medical history includes a smoking history of 35 cigarettes a day for many years. His family report a 2 stone weight loss over the past 8 months.

Serum electrolytes show :

Sodium 109 mmol/L (135-145)

Potassium 4.2 mmol/L (3.5-5.0)

Glucose 7 mmol/L

Urea 3.0 mmol/L (3.2-8.1)

*These findings are most likely to be due to:*

- 1- Epilepsy
- 2- Syndrome of inappropriate ADH secretion
- 3- Diuretics
- 4- Diabetes insipidus
- 5- Pituitary adenoma

## Answer &amp; Comments

Answer: 2- Syndrome of inappropriate ADH secretion

The biochemistry points to a syndrome of inappropriate ADH secretion, with a low serum osmolality  $[2(\text{Na} + \text{K}) + \text{urea} + \text{glucose}]$ . The clinical picture is consistent with small cell carcinoma of the lung, which is often associated.



- Hyponatremia with hypo-osmolality
- Elevated renal excretion of sodium ( $> 20$  mEq/L)
- Normal volume status
- Inappropriately elevated urine osmolality for the plasma osmolality

**SIADH****[ Q: 1131 ] MRCPass - Endocrinology**

A 65 year old man presents with a history of increased sweating and daily headaches. On examination the patient has large spade like hands and the facial features are exaggerated with large nose, prominent jaw and thick lips.

*Which screening test will yield the diagnosis?*

- 1- Alpha fetoprotein
- 2- Prolactin level
- 3- Serum glucose
- 4- Plasma Insulin-like Growth Factor levels
- 5- Serum phosphate

**Answer & Comments**

Answer: 4- Plasma Insulin-like Growth Factor levels

Elevated GH levels increase IGF-1 blood levels. Because IGF-1 levels are much more stable over the course of the day, they are often a more practical and reliable measure than GH levels. Elevated IGF-1 levels almost always indicate acromegaly.

The oral glucose tolerance test is also used to diagnose acromegaly, because ingestion of 75 g of the sugar glucose lowers blood GH levels less than 2 ng/ml in healthy people. In patients with acromegaly, this reduction does not occur.

**[ Q: 1132 ] MRCPass - Endocrinology**

A 20 year old man with headaches had a CT scan which shows a 1.5 cm diameter pituitary mass. His investigations show: prolactin concentration 1,520 (50-450) µU/L

testosterone 10 (11-36) nmol/L

LH 6 (0.5-9) IU/L

FSH 7 (1-8) IU/L

Early morning cortisol 450 (130-690) nmol/L

Growth hormone 2.5 ( $< 5.5$ ) mIU/L

*Which one of the following would support a diagnosis of pituitary tumor?*

- 1- Raised FSH and LH
- 2- High prolactin
- 3- Low GH
- 4- Low testosterone
- 5- Low cortisol

**Answer & Comments**

Answer: 2- High prolactin

A high prolactin level indicates likely prolactinoma in this case causing the macroadenoma seen on the CT scan.

**[ Q: 1133 ] MRCPass - Endocrinology**

A 35 year old female presents with sweating, tremors and palpitations. Examination reveals exophthalmos and a goitre. Her GP requests TFT's which show a TSH of 0.01 mU/L, FT4 35 pmol/L, FT3 3.1 nmol/L. She has positive antithyroid antibodies.

*What is the likely diagnosis?*

- 1- Hashimoto's thyroiditis
- 2- Grave's disease
- 3- Iodine deficiency
- 4- Post radioiodine treatment
- 5- Papillary thyroid carcinoma

**Answer & Comments**

Answer: 2- Grave's disease

Graves disease is the diagnosis - thyroid autoantibodies are increased. Almost 80% of



patients have exophthalmos. Medical treatment such as carbimazole or radioiodine treatment are recommended rather than surgery. There will be increased uptake on the thyroid radioisotope scan.



Exophthalmos in Grave's disease



[ Q: 1134 ] MRCPass - Endocrinology

A 45-year-old female is under investigation for excessive weight gain. She has central obesity with abdominal striae. She is hirsute.

A dexamethasone suppression test has been performed with 8 mg dexamethasone a day and the results are as follows:

Day	9 am Cortisol
0	970 nmol/L
2	335 nmol/L
3	110 nmol/L

*What is the diagnosis?*

- 1- Adrenal adenoma
- 2- Ectopic ACTH
- 3- Cushing's disease
- 4- Pheochromocytoma
- 5- Conn's syndrome

Answer & Comments

Answer: 3- Cushing's disease

Cushing's disease is pituitary dependent Cushing's (excessive ACTH secretion).

Cushing's syndrome refers to all forms of Cushing's including adrenal adenoma.

In the dexamethasone suppression test normal individuals suppress cortisol levels to < 50 nmol/L.

90 % of patients with pituitary dependent disease suppress production of cortisol to < 50 % of the baseline cortisol level on day 2.



A Cushingoid patient



[ Q: 1135 ] MRCPass - Endocrinology

An 8 year old boy with bilateral gynaecomastia is being investigated.

*Which one of the features points towards hypogonadotrophic hypogonadism being a likely cause?*

- 1- Small testes
- 2- Micropallus
- 3- Hypospadias
- 4- Hirsutism
- 5- Anosmia

Answer & Comments

Answer: 5- Anosmia

Hypospadias, micropenis, cryptorchidism can all point towards genital developmental disorder. Although hypogonadotrophic hypogonadism can be caused by pituitary disorders, a common presentation in childhood is with anosmia (Kallman's syndrome).



## [ Q: 1136 ] MRCPass - Endocrinology

A 42 year old man has episodes of dizziness, sweating and tremors, which are relieved by glucose. He has gained some weight recently and drinks approximately 10 units of alcohol weekly.

His investigations show normal full blood count, normal urea and electrolytes and a fasting plasma glucose concentration of 3.5 mmol/l.

*What is the best investigation to do?*

- 1- 24 hour urine catecholamines
- 2- Glucose tolerance test
- 3- Water deprivation test
- 4- 72 hour fast
- 5- MRI scan of the pituitary

## Answer &amp; Comments

Answer: 4- 72 hour fast

An insulinoma should be excluded (high insulin levels, low C peptide levels during hypoglycaemic episode) with a 72 hour fast.



## [ Q: 1137 ] MRCPass - Endocrinology

A 35 year old woman is admitted with a blood pressure of 230/120. She has a sinus tachycardia of HR 160 with intermittent runs of non sustained ventricular tachycardia. 24 hour urine shows increased Adrenaline of 720 (<80 nmol/24 hours) and Noradrenaline 2300 (<780 nmol/24 hours).

*Which one of the following medications would be most useful?*

- 1- Intravenous labetalol
- 2- Intravenous amiodarone
- 3- Intravenous sodium nitroprusside
- 4- Intravenous diltiazem
- 5- Oral flecainide

## Answer &amp; Comments

Answer: 3- Intravenous sodium nitroprusside

In the management of acute hypertensive crisis of pheochromocytoma as in this case, IV administration of sodium nitroprusside, nitroglycerine, or phentolamine can be used.

Preoperatively, the recommendation is preoperative adrenergic-blockade of  $\alpha_1$  and  $\alpha_2$  receptors with phenoxybenzamine (10-30 mg twice daily), or  $\alpha_1$  receptors with prazosin (starting with 1 to 2 mg three times daily).

Beta blockers can be useful for arrhythmias, but should not be commenced before alpha blockers because  $\beta$ -blockade alone can cause marked hypertension.



Pheochromocytoma



## [ Q: 1138 ] MRCPass - Endocrinology

A 40 year old lady has increasing hirsutism. She is embarrassed about having to shave her chin and also her chest. Her voice is becoming deeper.

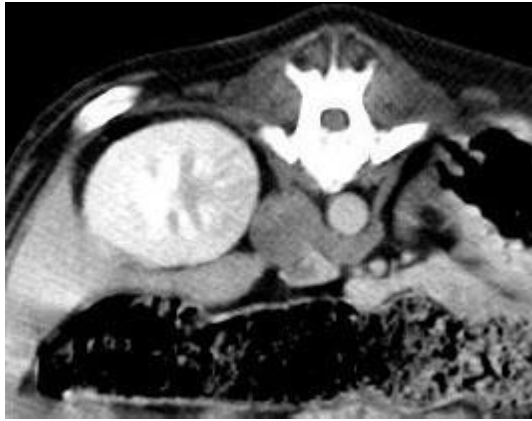
*Which one of the following is the most likely diagnosis?*

- 1- Drug induced hirsutism
- 2- Polycystic ovarian syndrome
- 3- Adrenal tumour
- 4- Congenital adrenal hyperplasia
- 5- Ovarian carcinoma

## Answer &amp; Comments

**Answer:** 3- Adrenal tumour

Rapid development of hirsutism is usually caused by an adrenal tumour. There are high testosterone or DHEA levels in the plasma.



MRI showing an adrenal tumour



## [ Q: 1139 ] MRCPass - Endocrinology

A 46 year male presents to the A&E with complaints of polyuria. He mentions that he has been passing about 4 litres of urine per day. He has recently been prescribed a new drug. Investigations show :

Serum sodium 141 mmol/l

Serum potassium 4.2 mmol/l

Plasma osmolality 290 mosmol/l (275-290)

Urine osmolality 330 mosmol/l (350-1000)

*What drug was likely to have been prescribed?*

- 1- Carbamazepine
- 2- Chlorpropamide
- 3- Fluoxetine
- 4- Furosemide
- 5- Lithium

## Answer &amp; Comments

**Answer:** 5- Lithium

The patient has drug induced Diabetes Insipidus based upon high urine output, low

urine osmolality high plasma osmolality. This is most likely to be caused by lithium.



## [ Q: 1140 ] MRCPass - Endocrinology

A 45 year old woman has a blood pressure of 210/100 mmHg and is assessed in the hypertension clinic. She is complaining of headaches and dizziness. Her fundi show silver wiring and tortuosity of vessels.

Her blood tests are Hb 12 g/dl, WCC  $7 \times 10^9/L$ , Platelets  $250 \times 10^9/L$ , urea  $7 \mu\text{mol/l}$ , creatinine  $75 \mu\text{mol/l}$ , sodium 146 mmol/l, potassium 2.7 mmol/l, cholesterol 4.5 mmol/l, triglyceride 1.8 mmol/l, bicarbonate 32 mmol/l.

*Which one of the following investigations is most important?*

- 1- 24 hour urine for catecholamines
- 2- 24 hour tape recording
- 3- Renin-aldosterone levels
- 4- Glucose measurement
- 5- Urine electrolytes

## Answer &amp; Comments

**Answer:** 3- Renin-aldosterone levels

The combination of high sodium, low potassium, high bicarbonate and hypertension in this patient makes one suspicious of Conn's syndrome. A high aldosterone and low renin level makes Conn's a possible diagnosis. An ambulant aldosterone/renin ratio of 25 ng/mU has been used as a cut off as being high.



## [ Q: 1141 ] MRCPass - Endocrinology

A 52 year old lady presents with palpitations. She has a Thyroid-stimulating hormone of 0.01 mU/l (0.3-4.0) and free thyroxine of 33 (10-24) pmol/l.

*Which one of the following conditions is consistent with these results?*

- 1- Radioiodine treatment

- 2- Secondary hyperthyroidism
- 3- Secondary hypothyroidism
- 4- Iodine deficiency
- 5- Graves disease

#### Answer & Comments

**Answer:** 5- Graves disease

Graves disease is the most likely from the picture of thyrotoxicosis. Secondary hyperthyroidism results in increased secretion of TSH (Thyroid Stimulating Hormone) by the pituitary, therefore there is an increase in both TSH and serum thyroxine.



#### [ Q: 1142 ] MRCPass - Endocrinology

A 18 year old man is referred to the endocrine clinic by his GP because he had poorly developed secondary sexual characteristics. He describes anosmia. On examination, he has lack of axillary or pubertal hair, small sexual organs (testicular volumes of approximately 5 ml).

Investigations reveal:

Testosterone 3.5 nmol/L (10-30)

Prolactin 350 mU/L (<450)

FSH 2.2 iu/L (1-7)

LH 1.8 iu/L (1-10)

**What is the most likely diagnosis?**

- 1- Testicular feminisation syndrome
- 2- Kallman's syndrome
- 3- Congenital adrenal hyperplasia
- 4- Marfan's syndrome
- 5- Klinefelter's syndrome

#### Answer & Comments

**Answer:** 2- Kallman's syndrome

X-linked Kallmann's syndrome (KS) is a genetic disease characterized by anosmia and hypogonadism due to impairment in the

development of olfactory axons and in the migration of gonadotropin-releasing hormone (GnRH)-producing neurons. 50% of the patients also have unilateral renal agenesis. Abnormalities of the sexual organs, mainly cryptorchidism and testicular atrophy are common.



#### [ Q: 1143 ] MRCPass - Endocrinology

A 55 year old patient with known acromegaly is reviewed during a 6 monthly outpatient appointment.

**Which one of the following clinical features is an indicator of disease activity?**

- 1- Increase in the loss of visual field
- 2- Palpitations
- 3- Depression
- 4- Worsening nystagmus
- 5- Low oxygen saturations

#### Answer & Comments

**Answer:** 1- Increase in the loss of visual field

In acromegaly, the features of disease activity are headache, increase in ring size, increased denture size, increased sweating, skin tags, glycosuria, hypertension and increased loss of visual field.



#### [ Q: 1144 ] MRCPass - Endocrinology

A 66 year old man has no previous medical history but presents with tendon xanthomas. He is not on regular medication. He drinks 5 pints of beer a day. A GP has investigated has the following blood results: cholesterol 6.5 (<5.2) mmol/l, triglycerides 1.9 (0.45-1.69) mmol/l. Thyroid function and albumin are normal.

**Which one of the following is most likely to be the cause?**

- 1- Oestrogen therapy
- 2- Familial hypercholesterolaemia

- 3- Alcoholism
- 4- SLE
- 5- Thyrotoxicosis

#### Answer & Comments

**Answer:** 3- Alcoholism

Causes of secondary hyperlipidaemia include:

- Type 2 diabetes mellitus
- chronic renal failure
- alcoholism
- drugs including: thiazides, glucocorticoids, oestrogens, cyclosporine, protease inhibitors
- hypothyroidism
- nephrotic syndrome.



#### [ Q: 1145 ] MRCPass - Endocrinology

A 30 year old man has been admitted diarrhoea. His blood pressure is 130/80 mmHg, and temperature 38°C.

Blood results show Na 118 mmol/l, K 2.8 mmol/l, urea 2 µmol/l, creatinine 50 µmol/l, chloride 70 mmol/l, bicarbonate 20 mmol/l. Serum osmolality is 287 mosm/l and urine osmolality is 700 mosm/l.

*Which is the most likely diagnosis for the hyponatraemia?*

- 1- Addisonian crisis
- 2- Diarrhoea and salt loss
- 3- SIADH
- 4- Blood taken from a drip arm
- 5- Drugs

#### Answer & Comments

**Answer:** 4- Blood taken from a drip arm

There is hyponatraemia, hypokalaemia and low urea with normal osmolality.

This is most likely due to inaccurate sampling from a drip arm. In the other causes of hyponatraemia, the plasma osmolality should be low as well.



#### [ Q: 1146 ] MRCPass - Endocrinology

A 40 year old man attends a fertility clinic. On examination, he is tall, slim and has bilateral gynaecomastia.

Investigations show high levels of plasma gonadotrophins.

*What is the likely diagnosis?*

- 1- Testicular feminisation syndrome
- 2- Klinefelter's syndrome
- 3- Marfan's syndrome
- 4- Noonan's syndrome
- 5- Homocystinuria

#### Answer & Comments

**Answer:** 2- Klinefelter's syndrome

Klinefelter's syndrome is the most common cause of male hypogonadism with an incidence of 1 in 1000 male births. Individuals have an extra X chromosome. Usually, the karyotype is 47, XXY. Accelerated atrophy of germ cells before puberty results in sterility with small, firm testes. Many patients are tall with relatively long legs.

Behavioural disorders and delayed speech development are common. Testosterone therapy may be used to improve the development of secondary sexual characteristics.



#### [ Q: 1147 ] MRCPass - Endocrinology

An 22 year old law yer has noted have persistent polyuria in excess of 4 litres per day. She mentions recently being involved in an accident and sustained head injury which she thinks she has recovered from.

Investigations reveal:



potassium 4.2 mmol/l  
 calcium 2.3 (2.2-2.6) mmol/l  
 glucose 5.2 (3.0-6.0)

*Which one of the following is the best way of confirming the diagnosis?*

- 1- Cortisol levels
- 2- Water deprivation test
- 3- ADH concentration
- 4- Measure autoantibodies to vasopressin
- 5- Therapeutic trial of low dose DDAVP

#### Answer & Comments

**Answer:** 2- Water deprivation test

The diagnosis is likely to be diabetes insipidus. This can be confirmed a water deprivation test where failure of urine concentration would be expected. During this test a patient is not allowed to drink and plasma ADH, plasma osmolality and urine osmolality are measured.

A therapeutic trial of DDAVP is only appropriate if a diagnosis of DI is confirmed (on the water deprivation test) and helps to differentiate between cranial or nephrogenic diabetes insipidus.



#### [ Q: 1148 ] MRCPass - Endocrinology

A 30 year old woman with a 10-year history of chronic renal insufficiency secondary to bilateral obstructive hydronephrosis presented for evaluation of pain in the right hip. She had undergone bilateral ureterostomies, but her creatinine level remained chronically elevated.

An X ray revealed a fracture of the right femoral neck necessitating internal fixation. The patient also reported that the tips of her fingers had increased in size over the past six months.

On examination, she had clubbing of her fingers with no skin lesions, joint swelling or tenderness.

*What is the diagnosis?*

- 1- Rheumatoid arthritis
- 2- Heberden's nodes
- 3- Osteopetrosis
- 4- Pseudohypoparathyroidism
- 5- Hyperparathyroidism

#### Answer & Comments

**Answer:** 5- Hyperparathyroidism

In this patient, hyperparathyroidism is secondary to renal osteodystrophy. The hip fracture and clubbing are consistent with hyperparathyroidism.



#### [ Q: 1149 ] MRCPass - Endocrinology

A 72 year old woman complains of muscle aches and pains and difficulty standing up. Investigations show :

Serum calcium 1.9 mmol/L (2.2-2.6)

Phosphate 0.9 mmol/L (0.8-1.6)

Albumin 36 mg/L

Alkaline phosphatase 280 IU/L (30-230)

*The most likely diagnosis is:*

- 1- Primary hyperparathyroidism
- 2- Paget's disease
- 3- Chronic renal failure
- 4- Osteoporosis
- 5- Osteomalacia

#### Answer & Comments

**Answer:** 5- Osteomalacia

A low calcium, normal phosphate and mildly raised alkaline phosphatase fits best with osteomalacia (vitamin D deficiency). Features of osteomalacia include bony pain and



deformity, increased tendency to fracture, proximal myopathy and hypocalcaemia. In adults, treatment is with a daily dose of calciferol (20-25 micrograms).



[ Q: 1150 ] MRCPass - Endocrinology

A 30 year old of average height and weight presents with polyuria and thirst. He has a blood glucose of 15 mmol/l. There is no ketonuria and pH on the blood gas is 7.35.

*How should he be treated?*

- 1- Start metformin
- 2- A fasting blood glucose should be sent before treatment
- 3- Subcutaneous insulin should be started
- 4- Commence on gliclazide and reassessment with BM monitoring at home
- 5- Dietary advice, review in a month with repeat glucose without any treatment

Answer & Comments

Answer: 4- Commence on gliclazide and reassessment with BM monitoring at home

He is a type 1 diabetic but there are no features of ketonuria or acidosis. He may have some residual  $\beta$  islet cell function and hence sulphonylureas may help to stimulate insulin production.



[ Q: 1151 ] MRCPass - Endocrinology

A 45 year old type II diabetic patient is screened at the clinic. His HBA1c is 6.7 % and his BMs are varying between 5 to 10. He has blood pressure of 135 / 70. There is no signs of dot and blot haemorrhages on fundoscopy.

He has urine dipstick showing protein ++ and blood +. Creatinine is 80 $\mu$ mol/l.

*Which one of the following is the best management step?*

- 1- Refer to a renal physician

- 2- Commence a beta blocker
- 3- Add insulin
- 4- No action and repeat routine checks in 3 months
- 5- Commence ACE inhibitor

Answer & Comments

Answer: 5- Commence ACE inhibitor

In diabetic patients with microalbuminaemia demonstrated on urine dipstick, ACE inhibitors have been shown to reduce progression towards diabetic nephropathy.



[ Q: 1152 ] MRCPass - Endocrinology

A 62 year old type II diabetic patient with a medial malleolus ulcer is being examined.

*Which one of the following indicates a bad prognosis?*

- 1- Flat foot
- 2- Absent pain sensation
- 3- Absent pulses
- 4- Absent vibration sense
- 5- Previous foot ulceration

Answer & Comments

Answer: 4- Absent vibration sense

All are associated with foot ulceration. Strong predictors of foot ulceration are altered foot sensation, foot deformities, and previous foot ulcer or amputation, with altered foot sensation being one of the strongest predictors.



[ Q: 1153 ] MRCPass - Endocrinology

A 42 year old woman presents with a 6 month history of galactorrhoea. She also complains of a 5 year history of dyspepsia.

Examination reveals a BMI of 23.5 kg/m<sup>2</sup> a small amount of galactorrhoea was noticed.

Slight neck enlargement was noticed during examination.

Investigations show:

a prolactin concentration of 980 mU/l (50-500 mU/l)

an oestradiol of 85 pmol/l (130-500)

a LH of 3.1 mU/l (3.5-8)

a FSH of 2.8 mU/l (3-8)

Ultrasonography (revealed a parathyroid enlargement and a 99mTcO<sub>4</sub>/MIBI scan showed two hyperplastic lesions.

*What is the likely diagnosis?*

- 1- Sheehan's syndrome
- 2- Acromegaly
- 3- Addison's disease
- 4- MEN type 1
- 5- Drug induced hyperprolactinaemia

#### Answer & Comments

Answer: 4- MEN type 1

The biochemical picture suggests a diagnosis of a microprolactinoma. The patient is also likely to have a parathyroid tumour. In the presence of dyspepsia, a gastrinoma should be considered to form an overall diagnosis of MEN 1 [pituitary tumour, parathyroid tumour, pancreatic tumour].

Hyperparathyroidism is the most common manifestation of MEN 1, caused by hyperplasia of multiple parathyroid glands. Pancreatic islet cell tumors represent the second most common manifestation of MEN 1 and occur in 80% of patients. Gastrinomas, insulinomas or glucagonomas are all pancreatic tumours which may occur.



[ Q: 1154 ] MRCPass - Endocrinology

A 50 year old woman with Cushingoid features has been shown to have elevated early morning and midnight plasma

cortisol levels.

*Which one of the following techniques is most specific in differentiating between ectopic Cushing's syndrome from pituitary dependent Cushing's disease?*

- 1- Low dose Dexamethasone suppression test
- 2- High dose Dexamethasone suppression test
- 3- Inferior petrosal sinus sampling
- 4- ACTH concentrations
- 5- Urine free cortisol

#### Answer & Comments

Answer: 3- Inferior petrosal sinus sampling

The inferior petrosal sinus sampling test, an elevated central ACTH concentration compared to a peripheral value (from arm veins) indicates pituitary dependent Cushing's disease. The test involves a microcatheter being advanced through initially the femoral vein and eventually into the inferior petrosal sinuses which lie along the internal aspect of the skull base which drain blood from the pituitary gland.

Both High Dose Dex Suppression Test (HDDST) and Inferior Petrosal Sinus Sampling are for differentiating pituitary tumour and ectopic cortisol production. Because the tumours are sometimes very small an impossible to image these tests are useful. They are based on different principles - IPSS measuring ACTH levels close to pituitary and peripherally. HDDST measuring ACTH and cortisol levels before and after giving Dex.

The most specific and most trouble is the IPSS (this is nearly 100% specific), so if there is a genuine question then it's the best test. That's because of how the test is done - the IPSS actually samples small amounts of blood from close to the pituitary and then further peripherally - so if there is a pit tumour it is very likely to show high levels of ACTH close to it and lower levels peripherally e.g. from the arm.

High Dose Dex Sup Test is much easier to do - all you need is 2 days and keep taking blood tests and give them dex tablets . How ever, if you think about the High Dose test - its not 100% specific because a small number of pituitary tumours will be so aggressive that even High Dose Dex does not suppress its ACTH production. Suppression is quoted at 75% for pituitary tumours with the HDDST.

Inferior petrosal sinus sampling



[ Q: 1155 ] MRCPass - Clinical pharmacology

A 20 year old woman has been taking oral medication for acne. She develops polyarthritis, pleuritic chest pains and raised liver enzyme tests.

Investigations show:

AST 90

ALT 180

bilirubin 19

antinuclear antibodies strongly positive at 1/640

*Which drug is likely to have caused this?*

- 1- Isotretinoin
- 2- Oxytetracycline
- 3- Amoxycillin
- 4- Minocycline
- 5- Erythromycin

Answer & Comments

Answer: 4- Minocycline

Minocycline can cause drug induced SLE. Procainamide, hydralazine and quinidine are the commonest drugs causing drug induced lupus. Muscle and joint pain and swelling, flu-like symptoms of fatigue and fever and serositis are common symptoms.



[ Q: 1156 ] MRCPass - Clinical pharmacology

A 50 year old woman who has recently been commenced on a new medication has galactorrhoea.

*Which one of the following medications is associated with galactorrhoea?*

- 1- Testosterone
- 2- Erythromycin
- 3- Rifampicin
- 4- Insulin

5- Chlorpromamide

Answer & Comments

Answer: 5- Chlorpromamide

Oral contraceptive pills have an oestrogenic effect.

Phenothiazines such as chlorpromamide and thioridazine can have dopamine antagonistic action) as does metoclopramide.

Bromocriptine is a dopamine agonist and this inhibits prolactin release. [one way to remember is this is that some of the drugs which can make Parkinson's worse can also cause galactorrhoea]



[ Q: 1157 ] MRCPass - Clinical pharmacology

A 45 year old man has drunk 10 pints of lager beers a day for 20 years. He presents with haemetemesis and has an OGD which shows bleeding oesophageal varices.

*Which one of the following medications is of prognostic and mortality benefit in this clinical situation?*

- 1- Octreotide
- 2- Terlipressin
- 3- Amoxycillin and metronidazole
- 4- Propanolol
- 5- Omeprazole

Answer & Comments

Answer: 2- Terlipressin

Octreotide and propanolol reduce rebleeding. Trials have shown that vasopressin analogues such as glypressin and terlipressin (34% relative risk) provide mortality benefit.

*Reference:*

*Cochrane Database Syst Rev. 2003;(1):CD002147.*



[ Q: 1158 ] MRCPass - Clinical pharmacology

A 35 year old man has chest pains. He mentions heavy cocaine use several hours ago.

*Which one of the following is a well known side effect of cocaine?*

- 1- Myocarditis
- 2- Pulmonary embolus
- 3- complete heart block
- 4- Cardiac ischaemia
- 5- Pericardial effusion

Answer & Comments

Answer: 4- Cardiac ischaemia

Cocaine is a stimulant and can cause agitation, hyperthermia and hypertension in overdose. A significant side effect in significant cocaine overdose is coronary arterial vasoconstriction leading to cardiac ischaemia.



[ Q: 1159 ] MRCPass - Clinical pharmacology

A 54 year old diabetic complained of lightheadedness and a near collapse episode. When his wife measured his blood sugar it was 2.3. He was taking glibenclamide for the diabetes.

*Which one of the following drugs potentiates hypoglycemia caused by glibenclamide?*

- 1- Steroid
- 2- Ranitidine
- 3- Phenytoin
- 4- Fluconazole
- 5- Aspirin

Answer & Comments

Answer: 4- Fluconazole

Plasma concentration of sulphonylureas (glibenclamide) is increased by fluconazole and miconazole. This has led to the hypoglycaemia in this case.



[ Q: 1160 ] MRCPass - Clinical pharmacology

A 33 year old lady who who has a past history of treated hypertension is in her 3rd trimester of pregnancy and requires on-going anti-hypertensive treatment.

*Which medication should be avoided?*

- 1- Nifedipine
- 2- Enalapril
- 3- Labetalol
- 4- Methyldopa
- 5- Hydralazine

Answer & Comments

Answer: 2- Enalapril

In pregnancy, angiotensin-converting enzyme (ACE)-inhibitors should be avoided because they may cause oligohydramnios, renal failure and intra-uterine death.



[ Q: 1161 ] MRCPass - Clinical pharmacology

*Which one of the following drugs affects the opioid receptors present on the circular and longitudinal muscles of the gut?*

- 1- Ondansetron
- 2- Omeprazole
- 3- Loperamide
- 4- Metoclopramide
- 5- Ranitidine

Answer & Comments

Answer: 3- Loperamide

Loperamide acts on the opioid receptors along the small intestine to decrease circular and longitudinal muscle activity. Loperamide exerts its antidiarrheal action by slowing intestinal transit and increasing contact time, and also by directly inhibiting fluid and electrolyte secretion via stimulating salt and water absorption.



[ Q: 1162 ] MRCPass - Clinical pharmacology

*Antinuclear antibodies will develop in the plasma of patients taking procainamide if the patients are:*

- 1- Fast acetylators
- 2- Slow acetylators
- 3- Thiopurine methyl transferase deficient
- 4- Slow oxidisers
- 5- Fast oxidisers

#### Answer & Comments

Answer: 2- Slow acetylators

Hydralazine and procainamide cause antinuclear antibodies to appear in the plasma of slow acetylators (drug induced lupus may occur). Drugs that possess an amide group (-NH<sub>2</sub>) are metabolised by acetylation. Slow acetylators are likely to develop adverse effects whereas rapid acetylators need higher doses of drugs.



[ Q: 1163 ] MRCPass - Clinical pharmacology

A 35 year old woman is transferred from the psychiatry ward with acute dystonia and oculogyric crisis after being treated with metoclopramide.

*Which treatment should be started?*

- 1- Phenytoin
- 2- Procyclidine
- 3- Dopamine

- 4- Adrenaline
- 5- Prochlorperazine

#### Answer & Comments

Answer: 2- Procyclidine

Dystonic reactions usually subside within 24 hours following cessation of treatment and can be treated with procyclidine 5-10 mg i.m.

They are well-recognized with dopamine receptor antagonists (neuroleptics). Phenothiazines, prochlorperazine, haloperidol and metoclopramide are examples of drugs which can cause dystonic reactions.

The newer antipsychotic drugs (e.g. risperidone, olanzapine) are more selective for dopamine D<sub>2</sub> receptors and therefore do not usually cause these adverse effects. They occur shortly after starting therapy, particularly in girls and young women.



[ Q: 1164 ] MRCPass - Clinical pharmacology

A 45 year old man who has had a renal transplant is concerned about the side effects of ciclosporin.

*Which of the following is a side effect?*

- 1- Hypotension
- 2- Skin pigmentation
- 3- Alopecia
- 4- Gum hypertrophy
- 5- Cough

#### Answer & Comments

Answer: 4- Gum hypertrophy

Ciclosporin causes hirsutism and gum hypertrophy (sodium valproate causes alopecia). Concomitant use of erythromycin can cause toxicity. It is a cyclic 11 aa polypeptide.





Gum hypertrophy



[ Q: 1165 ] MRCPass - Clinical pharmacology

A 70 year old man who is known to have ischaemic heart disease is admitted with left ventricular failure. He has been on NSAIDs for arthritis.

*What is likely to occur due to the fact that he has been on NSAIDs?*

- 1- Hyperkalaemia
- 2- Renal tubular acidosis
- 3- Reduced frusemide induced diuresis
- 4- Metabolic acidosis
- 5- Increased bicarbonate excretion

#### Answer & Comments

Answer: 3- Reduced frusemide induced diuresis

NSAIDs especially indomethacin reduce frusemide induced diuresis, probably by inhibiting the formation of prostaglandins in the renal tubules.



[ Q: 1166 ] MRCPass - Clinical pharmacology

An 82 year lady had a history of a red facial rash suffered venous eczema of legs. She was treated for acne rosacea by her GP.

On examination, she had bluish pigmentation on both the legs.

*What drug is likely to have caused this?*

- 1- Amiodarone
- 2- Hydroxychloroquine
- 3- Amoxicillin
- 4- Minocycline
- 5- Tetracycline

#### Answer & Comments

Answer: 4- Minocycline

This patient developed skin pigmentation in her venous eczema due treatment of her acne rosacea with minocycline.



[ Q: 1167 ] MRCPass - Clinical pharmacology

A 62 year old man with a history of angina is on atorvastatin.

*Which one of the following is the correct mechanism of action of statins?*

- 1- HMGCoA reductase promoter
- 2- LDL Receptor down regulation
- 3- Increase chylomicron levels
- 4- Decrease endogenous liver cholesterol synthesis
- 5- Reduce triglyceride levels

#### Answer & Comments

Answer: 4- Decrease endogenous liver cholesterol synthesis

Statins upregulate LDL receptors. They are HMGCoA reductase inhibitor. This leads to decreased liver cholesterol synthesis.



[ Q: 1168 ] MRCPass - Clinical pharmacology

A 28 year old woman was commenced on Carbamazepine for epilepsy. She had admitted to drinking 60 units a week and was also advised to discontinue alcohol consumption.

Therapeutic concentrations of Carbamazepine were achieved within 5 days with a dose of 200mg daily but the dose needed to be increased to 400 mg daily within two weeks to achieve a therapeutic plasma concentration.

*Which one of the following is likely to account for this observation?*

- 1- Auto-induction of liver enzymes
- 2- Auto-inhibition of liver enzymes
- 3- Discontinuation of alcohol intake
- 4- Drug interaction with an oral contraceptive
- 5- Reduced bioavailability of Carbamazepine

#### Answer & Comments

Answer: 1- Auto-induction of liver enzymes

In a patient who has discontinued alcohol, hepatic enzymes are auto-induced. The elimination of carbamazepine increases over the first few weeks because of the enzyme induction.



[ Q: 1169 ] MRCPass - Clinical pharmacology

A 40 year old woman who had commenced on a new drug has developed fevers and myalgia.

*Which one of the following drugs is likely to cause a systemic lupus like syndrome?*

- 1- Amoxycillin
- 2- Pyrazinamide
- 3- Procainamide
- 4- Mesalazine
- 5- Methotrexate

#### Answer & Comments

Answer: 3- Procainamide

A gene which is responsible for activity of hepatic N acetyl transferase resulting in slow and fast determines the likelihood of drug induced lupus. 45% of UK population are slow acetylators.

Drugs which are acetylated include isoniazid, hydralazine, dapsone, procainamide and sulphasalazine. Slow acetylators have increased risk of isoniazid induced peripheral neuropathy, and procainamide induced SLE. Fast acetylators are considered more risk of isoniazid induced hepatitis.



[ Q: 1170 ] MRCPass - Clinical pharmacology

A 65 year old man presents with chest pain. His ECG shows ST elevation consistent with myocardial infarction and he is thrombolysed with tenecteplase.

*Which one drug has not been proven to reduce future cardiovascular events and mortality?*

- 1- Ramipil
- 2- Amlodipine
- 3- Atenolol
- 4- Aspirin
- 5- Simvastatin

#### Answer & Comments

Answer: 2- Amlodipine

The four drugs which are shown to be of benefit are aspirin (ISIS-2), atenolol (ISIS-1), Ramipril (captopril studies in ISI-4), simvastatin in 4S study. Amlodipine does not provide mortality benefit.



[ Q: 1171 ] MRCPass - Clinical pharmacology

A 55 year old lady has atrial fibrillation. The rate control of the condition is poor. The medical student asked why a digoxin level was measured 6 hours after a dose.

*This is due to its:*

- 1- Rate of clearance
- 2- Rate of absorption
- 3- First pass metabolism
- 4- Rate of distribution

## 5- Enzyme breakdown

## Answer &amp; Comments

Answer: 4- Rate of distribution

Following digoxin administration, a 6 to 8 hour tissue distribution phase is observed.

This is followed by a much more gradual decline in the serum concentration of the drug, which is dependent on the elimination of digoxin from the body.



[ Q: 1172 ] MRCPass - Clinical pharmacology

A 55 year old with ischaemic heart disease has a cholesterol of 6.5 mmol/l.

*What drug should he be commenced on?*

- 1- 5HT3 antagonist
- 2- Beta agonist
- 3- Anticholinesterase
- 4- HMGCoA inhibitors
- 5- Immunoglobulin

## Answer &amp; Comments

Answer: 4- HMGCoA inhibitors

Statins e.g. simvastatin, are HMGCoA inhibitors. They increase the uptake of LDL (not HDL) by the liver. HMGCoA inhibitors should be offered to all patients with LDL above 3 mmol/l with IHD to bring it down below this level.

Myopathy is a serious side effect.



[ Q: 1173 ] MRCPass - Clinical pharmacology

An 18 year old girl presents with a drug overdose. She is vomiting and generally unwell. She does not have a history of drug abuse, but has been depressed for the past 2 years. ECG shows a QT interval of 575ms (normal < 470).

*Which one of the following is the most likely drug?*

- 1- Glue sniffing
- 2- Tricyclic antidepressant
- 3- Selective serotonin reuptake inhibitor
- 4- Methadone
- 5- Ethanol

## Answer &amp; Comments

Answer: 2- Tricyclic antidepressant

Out of these choices the most likely candidate causing prolonged QT is a tricyclic antidepressant. Amphetamine is also a common cause (not listed here). Methadone may cause QT prolongation at high doses, but because of the case scenario (no history of drug abuse) tricyclic antidepressant is the better answer.



[ Q: 1174 ] MRCPass - Clinical pharmacology

A 50 year old patient is hyperventilating. An ABG shows pH 7.30, pO<sub>2</sub> 12 kPa, pCO<sub>2</sub> 4.5 kPa, BE -10 mmol/l.

*What does base excess mean?*

- 1- There is an excess amount of bicarbonate in the system
- 2- Serum bicarbonate concentration is 10 below the normal range
- 3- The amount of base that would have to be added or removed to obtain the pH actually measured
- 4- Shows the amount of excess alkalosis which might occur in a controlled environment
- 5- A high base excess is expected in a hyperventilating patient

## Answer &amp; Comments

Answer: 3- The amount of base that would have to be added or removed to obtain the pH actually measured

The base excess is a figure calculated by many blood gas machines to aid interpretation of data.

The principles of the calculation are as follows: predict the pH that would arise in normal blood in the presence of the pCO<sub>2</sub> actually measured; then calculate the amount of acid or base that would have to be added to the blood to change the calculated pH into the pH as actually measured. This value is the base deficit or excess, in mmol/l, which quantifies the metabolic component (rather than the respiratory) of acid-base disturbance.



[ Q: 1175 ] MRCPass - Clinical pharmacology

A 50 year old homeless man is brought to the accident and emergency department by ambulance. He is unconscious (GCS 5) with pin-point pupils and a slow respiratory rate.

*Immediate specific treatment should be:*

- 1- Naloxone (0.4 mg) intravenously
- 2- N-acetyl cysteine (150 mg/kg over 15 min) intravenously
- 3- Gelofusin 1 litre immediately
- 4- Check paracetamol and salicylate levels urgently
- 5- Conservative management and cardiac monitoring

#### Answer & Comments

Answer: 1- Naloxone (0.4 mg) intravenously

The clinical picture is consistent with an opioid overdose, the treatment for which is intravenous naloxone (0.4 mg), repeated up to a total dose of 2 mg depending on the response.



[ Q: 1176 ] MRCPass - Clinical pharmacology

A 25 year old Type I diabetic is currently on a human mixtard 30 twice a day. He has

recently been considered by the diabetologist for insulin glargine.

*Why might this be the case?*

- 1- Poor control due to high blood sugars
- 2- He is working night shifts
- 3- Hypoglycaemic episodes
- 4- He is being considered for islet cell transplantation
- 5- He is non compliant with insulin

#### Answer & Comments

Answer: 3- Hypoglycaemic episodes

Insulin glargine is a long-acting insulin analogue, there is a smooth, prolonged absorption profile with no peaks. As such, it is a long-acting agent, suitable for providing a basal level of insulin which mimics the normal physiological state.

Its smooth profile reduces the risk of hypoglycaemia, and when given at night, provides good control of the fasting blood glucose.



[ Q: 1177 ] MRCPass - Clinical pharmacology

A 35 year old woman has overdosed on iron tablets which were prescribed for her mother's anaemia. She has had 2 generalised seizures and has dark stools. Plasma iron concentration was 80 mmol/l.

*What drug should be used for treatment?*

- 1- Desferrioxamine
- 2- Methylene blue
- 3- Flumazenil
- 4- N acetylcysteine
- 5- Naloxone

#### Answer & Comments

Answer: 1- Desferrioxamine

Iron overdose can lead to convulsions, GI haemorrhage, hepatic and renal failure, pulmonary oedema and DIC. GI haemorrhage as early as a few hours after the overdose.

Desferrioxamine (maximum dose per day is 80 mg/kg) is appropriate for:

- I. Patients with a serum iron level of 55-90 mmol/L with GI haemorrhage
- II. Patients with a serum iron > 90 mmol/L



[ Q: 1178 ] MRCPass - Clinical pharmacology

A 40 year old man works in a factory with industrial chemicals. He has become confused and depressed over the last 4 months.

On examination he has gait ataxia, tremor in the limbs and reduced pain and temperature sensation in his feet.

*Which is the most likely chemical causing these symptoms?*

- 1- Lead
- 2- Bismuth
- 3- Manganese
- 4- Mercury
- 5- Carbon monoxide

#### Answer & Comments

Answer: 4- Mercury

The primary symptoms of mercury poisoning are vague psychiatric ones. Short-time memory can deteriorate. Organic mercury can cross the blood-brain barrier and cause irreversible nervous system and brain damage, e.g., loss of motor control, numbness in limbs, blindness, and inability to speak.

Elemental mercury (the silver liquid familiar from thermometers) is the most common occupational source. Exposure typically comes from inhaling mercury vapors. Inorganic salts of mercury (e.g., mercurous chloride, or

calomel) are used in some products to inhibit the growth of fungi and bacteria.



[ Q: 1179 ] MRCPass - Clinical pharmacology

A 35 year old lady was prescribed haloperidol for radiation sickness.

*What is the mechanism of action of Haloperidol as an anti emetic?*

- 1- H1 receptor antagonism
- 2- D2 receptor antagonism at the chemoreceptor trigger zone
- 3- D2 receptor antagonism at the brain centre
- 4- D2 receptor antagonism at the periphery
- 5- Reduced GI motility

#### Answer & Comments

Answer: 2- D2 receptor antagonism at the chemoreceptor trigger zone

The butyrophenones (haloperidol) are dopamine antagonists and act centrally by blocking the chemoreceptor trigger zone. They are of considerable value for the prophylaxis and treatment of nausea and vomiting associated with diffuse neoplastic disease, radiation sickness, and the emesis caused by drugs such as opioids, general anaesthetics, and cytotoxics.



[ Q: 1180 ] MRCPass - Clinical pharmacology

A heroin addict who is on methadone program was involved in a motor vehicle accident and sustained multiple pelvic fractures.

*How would you manage his analgesia?*

- 1- Change analgesia to paracetamol with PRN oramorph
- 2- Continue on methadone and add in diclofenac
- 3- Continue methadone and titrate to pain requirement

- 4- Continue on methadone and add in morphine as required
- 5- Discontinue methadone and start on morphine

#### Answer & Comments

**Answer:** 5- Discontinue methadone and start on morphine

Although methadone is an effective analgesic, many clinicians prefer to select an alternative opioid such as morphine, hydromorphone or oxycodone to provide analgesia in methadone-maintained patients to allow clear distinction between treatment of addiction and treatment of pain.



[ Q: 1181 ] MRCPass - Clinical pharmacology

A 50 year old man of African origin presents with blood pressure 220/110mmHg. Urinalysis is negative.

Funduscopy shows AV nipping but no haemorrhages or papilloedema.

*Which of the following treatment options is most appropriate?*

- 1- Oral atenolol 50mg od and outpatient review
- 2- Oral lisinopril 20mg and outpatient review
- 3- Oral amlodipine 10 mg od and outpatient review
- 4- Urgent 24 hour catecholamines
- 5- Urgent admission for control of hypertension

#### Answer & Comments

**Answer:** 3- Oral amlodipine 10 mg od and outpatient review

The diagnosis of accelerated hypertension requires the finding of fundal haemorrhages and exudates, with or without papilloedema. The BTS guidelines recommends that older

(>55) and afro-caribbean patients should have C (calcium channel blockers) or D (diuretics). Hence amlodipine is the best choice.



[ Q: 1182 ] MRCPass - Clinical pharmacology

A 75 year old woman has general lethargy. Her drug list includes aspirin, atenolol, bendrofluazide and chlorpromamide.

Investigations show:

Sodium 110 (137-144)

Potassium 3.1 (3.5-4.9)

Urea 6.2 (2.5-7.5)

Creatinine 95 micromol/L (60-110)

Glucose 12.2 (3.0-6.0)

ACTH levels : normal

chest Xray : normal

*What is the likely cause of the hyponatraemia?*

- 1- Cyclophosphamide
- 2- Bendrofluazide
- 3- Hypoadrenalism
- 4- Syndrome of inappropriate secretion of antidiuretic hormone
- 5- Diabetes

#### Answer & Comments

**Answer:** 2- Bendrofluazide

Diuretics are most likely to cause combined hyponatraemia and hypokalaemia, as in this case. Combined hypokalaemia with hyponatraemia occurs in very few conditions such as increased antidiuretic hormone with raised ACTH, vomiting, and diuretics.



[ Q: 1183 ] MRCPass - Clinical pharmacology

A 35 year old man attends the alcoholic addictions clinic. He is keen to try to stop drinking and is given some disulfiram.



*What is the mode of action of the drug?*

- 1- Reduces appetite for alcohol
- 2- Inhibits acetaldehyde dehydrogenase activity
- 3- Reduces the likelihood of hangover
- 4- Inhibits alcohol dehydrogenase activity
- 5- Protects the liver

#### Answer & Comments

**Answer:** 2- Inhibits acetaldehyde dehydrogenase activity

Alcohol is metabolized in the liver to form acetaldehyde by alcohol dehydrogenase. Acetaldehyde is then oxidized to acetate (acetic acid) by acetaldehyde dehydrogenase (AcDH). Disulfiram produces irreversible inhibition of this enzyme, resulting in accumulation of acetaldehyde which may be responsible for most of the signs and symptoms occurring after ethanol ingestion in disulfiram-treated patients.



[ Q: 1184 ] MRCPass - Clinical pharmacology

Drug A is more efficacious than drug B.

*What does this mean?*

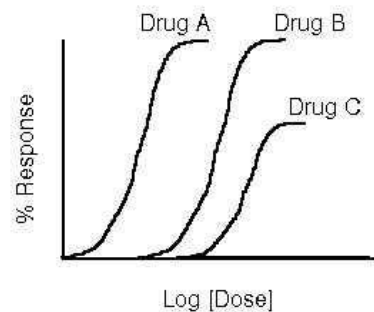
- 1- It is more easily bioavailable
- 2- It has a higher maximal response
- 3- It has a lower maximal response
- 4- Less drug is required to achieve the same effect
- 5- There are more side effects

#### Answer & Comments

**Answer:** 2- It has a higher maximal response

Efficacy relates to the maximal response that can be produced by the drug when taken to high levels. For example, the diuretic furosemide eliminates much more salt and water through urine than does the diuretic

chlorothiazide. Thus, furosemide has greater efficacy than chlorothiazide.



Drug A and Drug B have the same efficacy.

Drug A has greater potency than B or C because the dose of B or C must be larger to produce the same effect as A. Drug C has the lowest efficacy and potency.



[ Q: 1185 ] MRCPass - Clinical pharmacology

A 65 year old woman treated for several years for atrial fibrillation with digoxin, presents with nausea and vomiting. ECG revealed ventricular tachycardia and electrolytes revealed hypokalemia.

*Which one of the following signs indicates digoxin toxicity?*

- 1- Diarrhoea
- 2- Miosis
- 3- Tremor
- 4- Jaundice
- 5- Xanthopsia

#### Answer & Comments

**Answer:** 5- Xanthopsia

Hypokalaemia and hypomagnesaemia increase the risk of digoxin toxicity. Hemodialysis has no role in digitalis toxicity. Administration of Fab antibody fragments is the most effective treatment. Xanthopsia

(yellow vision), nausea and vomiting are common side effects.



[ Q: 1186 ] MRCPass - Clinical pharmacology

A 35 year old lady has been started on azathioprine for rheumatoid arthritis. She complains of lethargy and has a blood test which shows: Hb 7.5 g/dl, WCC  $3 \times 10^9/L$ , platelets  $45 \times 10^9/L$ .

*The reaction is more likely if she :*

- 1- Is drinking alcohol
- 2- Has thiopurine methyl transferase deficiency
- 3- Has increased liver enzyme activity
- 4- Is on warfarin
- 5- Is a fast acetylator

#### Answer & Comments

Answer: 2- Has thiopurine methyl transferase deficiency

The patient has developed a pancytopenia due to azathioprine toxicity. Approximately 1 in 300 Caucasians have thiopurine methyl transferase (TPMT) deficiency.

TPMT is the enzyme that metabolises 6-mercaptopurine and its deficiency results in high risk of azathioprine toxicity.



[ Q: 1187 ] MRCPass - Clinical pharmacology

A 55 year old lady has atrial fibrillation which is being treated with amiodarone. She has also been recently started on simvastatin.

*This combination of drugs puts her at increased the risk of developing:*

- 1- Osteoporosis
- 2- Pulmonary fibrosis
- 3- Optic neuritis
- 4- Myopathy

- 5- Corneal microdeposits

#### Answer & Comments

Answer: 4- Myopathy

The combination of amiodarone and a statin increases the risk of developing myopathy.



[ Q: 1188 ] MRCPass - Clinical pharmacology

*Which of the following drugs could cause a raised prolactin level?*

- 1- Metoclopramide
- 2- Ramipril
- 3- Lansoprazole
- 4- Thiazides
- 5- Propanolol

#### Answer & Comments

Answer: 1- Metoclopramide

The drugs that may increase prolactin levels are: Phenothiazines, haloperidol, metoclopramide, methyl dopa and oestrogens.



[ Q: 1189 ] MRCPass - Clinical pharmacology

A 38 year old man with several medical conditions was investigated for infertility.

*Which one of the following drugs is most likely to cause this?*

- 1- Mesalazine
- 2- Sulfasalazine
- 3- Aspirin
- 4- Azathioprine
- 5- Amoxycillin

#### Answer & Comments

Answer: 2- Sulfasalazine

Sulfasalazine, anabolic steroids, cyclophosphamide, chlorambucil, busulfan and cisplatin are drugs which cause azoospermia.



[ Q: 1190 ] MRCPass - Clinical pharmacology

A 45 year old man is admitted with an upper lobe pneumonia. Investigations show hyponatraemia and mildly deranged LFTs.

His CXR shows shadowing in the right mid and upper zones. Therapy is started and 5 days later he becomes acutely jaundiced with red discolouration of the urine.

*Which one of the following drugs is the likely cause?*

- 1- Rifampicin
- 2- Amoxycillin
- 3- Tetracycline
- 4- Erythromycin
- 5- Cefuroxime

#### Answer & Comments

Answer: 1- Rifampicin

The patient could have been commenced on rifampicin for suspected Legionella pneumonia or tuberculosis. Rifampicin is a hepatic enzyme inducer and can lead to acute jaundice, and patient should be told that urine will turn a red discolouration.



[ Q: 1191 ] MRCPass - Clinical pharmacology

A 60 year old woman presents with a digoxin overdose. Her ECG shows reversed tick ST segments and she has a heart rate of 30 bpm.

*Which of the following agents should be used?*

- 1- Atropine
- 2- Charcoal
- 3- Anti digoxin antibodies

- 4- Diltiazem
- 5- Metoprolol

#### Answer & Comments

Answer: 3- Anti digoxin antibodies

Brady arrhythmias and ventricular arrhythmias can occur in digoxin overdose. Most often seen are heart block with or without supraventricular arrhythmias. Other effects include vomiting, bradycardia, and hyperkalemia. In toxicity, Digoxin Immune Fab fragments (derived from specific antidigoxin antibodies produced in sheep) can be given.



ECG showing Digoxin effect causing reversed Tick ST segments



[ Q: 1192 ] MRCPass - Clinical pharmacology

A 39 year old man presents with cocaine overdose.

*Which of the following should be avoided?*

- 1- Nitrates
- 2- Beta blocker
- 3- Haloperidol
- 4- Diazepam
- 5- Amlodipine

#### Answer & Comments

Answer: 2- Beta blocker

Treatment of acute cocaine intoxication can be difficult. Although  $\beta$ -blockers have been used successfully to manage supraventricular tachyarrhythmias, they also produce unopposed alpha-stimulation in coronary vasospasm, which can exacerbate cocaine-induced hypertension and, at the same time, cause reductions in coronary blood flow.



[ Q: 1193 ] MRCPass - Clinical pharmacology

A 28 year old woman is 20 weeks pregnant. She complains of fever and dysuria. An MSU has showed a significant growth of Gram negative bacilli.

*What is the best choice antibiotic in this situation?*

- 1- Teicoplanin
- 2- Tazosin
- 3- Cefaclor
- 4- Trimethoprim
- 5- Ciprofloxacin

Answer & Comments

Answer: 3- Cefaclor

Trimethoprim is a folate antagonist and can increase the risk of neural tube defects. There is relative contraindication for ciprofloxacin in pregnancy due to the possible teratogenic effect. Augmentin, cefaclor, nitrofurantoin and metronidazole are safe in pregnancy.



[ Q: 1194 ] MRCPass - Clinical pharmacology

A 30 year old female presented with a 12-hr history of progressive bluish discolouration of lips and limbs. She denied ingesting or inhaling any drug or substance. A high  $\text{paO}_2$  in the presence of 'cyanosis' and 'dark blood' led to suspicion of methaemoglobinemia. Co-oximetry revealed the methaemoglobin level to be 47%.

*Which of the following is most likely to have caused the condition?*

- 1- Ascorbic acid
- 2- Charcoal
- 3- Methylene blue
- 4- Paracetamol
- 5- Chloroquine

Answer & Comments

Answer: 5- Chloroquine

Methaemoglobinemia can be caused either by a genetic defect in red cell metabolism or haemoglobin structure, or acquired by a variety of drugs and toxins. About forty substances have been implicated in causing this condition, the most prominent being dapsone, nitrates, prilocaine, antimalarials, sulphonamides and dyes.

Domestic causes of acquired methaemoglobinemia include ingestion of food and water high in nitrites and nitrates, exposure to aniline dyes in dyed blankets, laundry markings, freshly dyed shoes, and cleaning solution.

Standard pulse oximeters give spuriously low readings in the presence of excess methaemoglobin. Methylene blue is indicated in any patient with symptoms and/or signs of hypoxia (mental changes, tachycardia, dyspnoea, chest pain). It is contraindicated in G6PD deficiency. High flow oxygen should be administered.



Methaemoglobinemia causing cyanosis (hand on the right of the picture)



[ Q: 1195 ] MRCPass - Clinical pharmacology

*Which of the following describes the mode of action of alendronate?*

- 1- Osteoclast inhibition

- 2- Osteoblast stimulation
- 3- Promotes collagen synthesis
- 4- Causes hypocalcaemia
- 5- Promotes bone calcification

#### Answer & Comments

**Answer:** 1- Osteoclast inhibition

Bisphosphonates inhibit bone resorption through inhibition of osteoclastic activity.



[ Q: 1196 ] MRCPass - Clinical pharmacology

An epileptic patient is on carbamazepine. He is commenced on a new drug and noticed that the frequency of his seizures has increased.

*Which one of these drugs is likely to be responsible?*

- 1- Amoxycillin
- 2- Phenobarbitone
- 3- Tetracycline
- 4- Paracetamol
- 5- Digoxin

#### Answer & Comments

**Answer:** 2- Phenobarbitone

Liver enzyme inducers can interact and increase breakdown of antiepileptic drugs.

The enzyme inducers are PC BRAS - phenytoin, carbamazepine, barbiturates (phenobarbitone), rifampicin, alcohol and sulphonamides.



[ Q: 1197 ] MRCPass - Clinical pharmacology

*Which part of the renal system do thiazides act on?*

- 1- Ascending loop of Henle
- 2- Descending loop of Henle

- 3- Proximal convoluted tubule
- 4- Distal convoluted tubule
- 5- Collecting duct

#### Answer & Comments

**Answer:** 4- Distal convoluted tubule

Thiazides block Na<sup>+</sup> and Cl<sup>-</sup> reabsorption in the distal tubule. There is usually passive Na<sup>+</sup> and Cl<sup>-</sup> co transport. With this blocked, natriuresis occur. The distal convoluted tubule accounts for 5% of total sodium chloride reabsorption.



[ Q: 1198 ] MRCPass - Clinical pharmacology

A 65 year old man has been taking amiodarone 200 mg daily for troublesome atrial fibrillation. He seems to be euthyroid with no palpable goitre.

Investigations revealed: Serum Free T<sub>4</sub> - 21 pmol/L (9-26); Serum total T<sub>3</sub> - 0.7 nmol/L (0.9-2.8); Serum TSH - 6.3 mU/L (<5).

*Which of the following explains these results?*

- 1- Amiodarone-induced hypothyroidism
- 2- Amiodarone drug interaction with digoxin
- 3- 'Sick euthyroid' syndrome
- 4- TSH secreting tumour
- 5- Carbimazole ingestion

#### Answer & Comments

**Answer:** 1- Amiodarone-induced hypothyroidism

This patient is likely to have amiodarone-induced hypothyroidism.

There is normal T<sub>4</sub> and a low T<sub>3</sub> with elevated TSH. This is because one of the effects of amiodarone is to inhibit the peripheral conversion of T<sub>4</sub> to T<sub>3</sub>.



[ Q: 1199 ] MRCPass - Clinical pharmacology

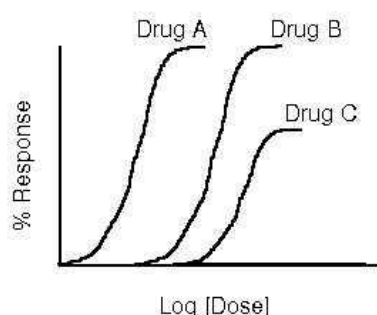
*Drug A is more potent than drug B. There is more maximal effect*

- 1- There is less maximal effect
- 2- What does this mean?
- 3- There is greater bioavailability
- 4- Less drug is required for the same effect
- 5- More side effects may occur

#### Answer & Comments

Answer: 4- Less drug is required for the same effect

The potency of a drug relates to the amount of drug needed to produce a given effect. Less drug is hence required for the same effect for a drug with higher potency. For example, if 5 milligrams of drug A relieves pain as effectively as 10 milligrams of drug B, drug A is twice as potent as drug B.



Drug A and Drug B have the same efficacy.

Drug A has greater potency than B or C because the dose of B or C must be larger to produce the same effect as A. Drug C has the lowest efficacy and potency.



[ Q: 1200 ] MRCPass - Clinical pharmacology

A 65 year old woman has increasing frequency of headaches. She has been diagnosed as having migraines by the neurologist a year ago.

*Which of the following drugs is appropriate for prophylaxis against migraine?*

- 1- Paracetamol
- 2- Lamotrigine
- 3- Clomiphene
- 4- Propranolol
- 5- Thyroxine

#### Answer & Comments

Answer: 4- Propranolol

Propranolol, sodium valproate, pizotifen and amitriptyline can be used for prophylaxis in migraine.



[ Q: 1201 ] MRCPass - Clinical pharmacology

A 50 year old patient has a history of COPD and needs to be considered for chemotherapy.

*Which of the following drugs may cause lung fibrosis and should be avoided?*

- 1- 5-fluorouracil
- 2- Tamoxifen
- 3- Vincristine
- 4- Bleomycin
- 5- Cytarabine

#### Answer & Comments

Answer: 4- Bleomycin

Busulphan, bleomycin and methotrexate are cytotoxic agents which can cause lung fibrosis. The changes are usually in the lower zones of the lung.



[ Q: 1202 ] MRCPass - Clinical pharmacology

A 58 year old man has a history of obesity, gastro oesophageal reflux disease, lower back pain and coronary disease. He presents with



large, itchy wheals over the trunk and a sensation of tightness in throat.

*Which one of the following drugs is likely to have triggered this skin eruption?*

- 1- Nitrates
- 2- Atorvastatin
- 3- Lansoprazole
- 4- Aspirin
- 5- Paracetamol

#### Answer & Comments

Answer: 4- Aspirin

Among this list of drugs, aspirin is most likely to cause drug related urticarial reaction (NSAIDs as well can cause this).



[ Q: 1203 ] MRCPass - Clinical pharmacology

A 65 year old woman has fast atrial fibrillation. Her serum creatinine concentration is 330 umol/L.

*What is the main factor that would aid in choosing the loading dose of digoxin?*

- 1- Lipid solubility
- 2- A. Absorption Volume of distribution
- 3- Renal clearance
- 4- Plasma half-life
- 5- First pass metabolism

#### Answer & Comments

Answer: 3- Renal clearance

The loading dose should take into account the volume of distribution of a drug and also clearance. In the case of digoxin, renal clearance is the more important factor as toxicity is much more likely when there is moderate or severe renal impairment.



[ Q: 1204 ] MRCPass - Clinical pharmacology

A 75 year old man presents to the hospital with drowsiness and confusion. He is tachycardic and tachypnoeic.

His pulse oximeter reading is 88% on room air and he is not cyanosed. He has another family member admitted with similar symptoms a month ago.

*Which one of the following is most likely?*

- 1- Antifreeze poisoning
- 2- Carbon monoxide poisoning
- 3- Tuberculosis
- 4- Amitriptyline overdose
- 5- Atenolol overdose

#### Answer & Comments

Answer: 2- Carbon monoxide poisoning

In carbon monoxide poisoning, it is essential to measure CO levels, since pulse oximeters cannot distinguish between COHb and HbO<sub>2</sub>.



[ Q: 1205 ] MRCPass - Clinical pharmacology

An 45 year old man who has hypertension. He has recently become depressed from losing his job and took an overdose of atenolol. He has a heart rate of 35 bpm.

*What should be given?*

- 1- Sliding scale insulin
- 2- Metformin
- 3- Diltiazem
- 4- Atropine
- 5- Eprex

#### Answer & Comments

Answer: 4- Atropine

Bradycardia is a common feature of significant B blocker overdose and should be treated by

the administration of atropine. Intravenous glucagon may also be given, particularly in patients with haemodynamic compromise. Temporary cardiac pacing may be necessary in patients unresponsive to drug therapy.



[ Q: 1206 ] MRCPass - Clinical pharmacology

A 25 year old man presents after ingesting a drug at a disco. Investigations reveals a serum creatine kinase of 15,000 IU/L (24-195)

*Which one of the following drugs is most likely to be responsible?*

- 1- Lorazepam
- 2- Gamma hydroxybutyrate (GHB)
- 3- Ecstasy (MDMA)
- 4- Antifreeze
- 5- Diamorphine

#### Answer & Comments

Answer: 3- Ecstasy (MDMA)

The elevated Creatinine Kinase levels suggest rhabdomyolysis. Features of acute MDMA (ecstasy) toxicity include agitation, tachycardia, hypertension, dilated pupils, sweating, hyperthermia, disseminated intravascular coagulation (DIC), rhabdomyolysis and acute renal failure.



[ Q: 1207 ] MRCPass - Clinical pharmacology

A 43 year old man was brought to the A&E confused and agitated after cocaine use.

*Which of the following finding would be consistent with cocaine abuse?*

- 1- Hypothermia
- 2- Hyperkalemia
- 3- Hyperthermia
- 4- Hypokalemia
- 5- Hypernatremia

#### Answer & Comments

Answer: 3- Hyperthermia

Cocaine stimulates the central nervous system, causing agitation, dilated pupils, tachycardia, hypertension, hallucinations, hyperthermia, hypertonia, and hyperreflexia; cardiac effects include chest pain (due to vasospasm), myocardial infarction, and arrhythmias.



[ Q: 1208 ] MRCPass - Clinical pharmacology

A 75 year old man with atrial fibrillation has been stable on warfarin for many years. He is admitted with a epistaxis and his INR is found to be 10.

*Recent prescription of which of the following drugs might explain this?*

- 1- Barbiturates
- 2- Ciprofloxacin
- 3- Griseofulvin
- 4- Phenytoin
- 5- Carbamazepine

#### Answer & Comments

Answer: 2- Ciprofloxacin

Ciprofloxacin is a liver enzyme inhibitor (CYP450) and hence potentiates the action of warfarin, leading to a high INR.



[ Q: 1209 ] MRCPass - Clinical pharmacology

A 60 year old man has been started on Viagra by his GP. The patient has symptoms of angina.

*Which one of the following drugs is contraindicated?*

- 1- Atenolol
- 2- Clopidogrel
- 3- Glyceryl trinitrate

- 4- Simvastatin
- 5- Ramipril

#### Answer & Comments

Answer: 3- Glyceryl trinitrate

Both sildenafil (viagra) and nitrates have a vasodilatory effect, hence potentially

cumulative hypotensive effect. Caution should be taken in patients with ischaemic heart disease and sildenafil.



[ Q: 1210 ] MRCPass - Clinical pharmacology

A 70 year old woman with ascites secondary to carcinoma of the ovary is complaining of abdominal distension and intermittent vomiting.

*The antiemetic of choice is:*

- 1- Dexamethasone
- 2- Cyclizine
- 3- Metoclopramide
- 4- Ondanestron
- 5- Haloperidol

#### Answer & Comments

Answer: 3- Metoclopramide

Metoclopramide as a prokinetic agent will increase the rate of transit of food through the gastrointestinal tract and alleviate her symptoms.



[ Q: 1211 ] MRCPass - Clinical pharmacology

A 25 year old lady presents with acute dystonia and oculogyric crisis after being treated with a drug.

*Which one of the following drugs is most likely?*

- 1- Amitriptyline

- 2- HRT
- 3- Calcium gluconate
- 4- Ondansetron
- 5- Azathioprine

#### Answer & Comments

Answer: 1- Amitriptyline

Causes or triggering factors in oculogyric crisis include: neuroleptics, benzodiazepines,

carbamazepine, chloroquine, cisplatin, influenza vaccine, levodopa, lithium, metoclopramide, nifedipine, reserpine, tricyclics.

They occur shortly after starting therapy, particularly in girls and young women as well as the elderly. The problem usually subsides within 24 hours following cessation of treatment and can be treated with procyclidine 5-10 mg i.m.



[ Q: 1212 ] MRCPass - Clinical pharmacology

A 25 year-old woman presents with acute abdominal pain. She is diagnosed with an acute exacerbation of acute intermittent porphyria (AIP).

*What is the most likely predisposing drug?*

- 1- Barbiturates
- 2- Amoxycillin
- 3- Oral contraceptive pill
- 4- Chlorpromazine
- 5- Paracetamol

#### Answer & Comments

Answer: 3- Oral contraceptive pill

benzodiazepines, oral contraceptive pills, sulphonamides (co-trimoxazole), phenytoin and rifampicin.



[ Q: 1213 ] MRCPass - Clinical pharmacology

A 70 year old man is assessed in the psychiatry clinic. The SHO is concerned about lithium toxicity.

*Which of the following is a sign that his lithium level is toxic?*

- 1- Weight loss
- 2- Poor appetite
- 3- Xanthopsia
- 4- Tremors
- 5- Skin pigmentation

Answer & Comments

Answer: 4- Tremors

tremors, oliguria, blurred vision, diarrhoea, vomiting, hyperreflexia, convulsions and decreased consciousness.



[ Q: 1214 ] MRCPass - Clinical pharmacology

A 70 year old man is referred to the rheumatology clinic because of inadequate pain relief. He has osteoarthritis affecting both hips. His GP has prescribed paracetamol and codeine 30mg four times daily but he has found little improvement in his pains.

*What is the likely cause?*

- 1- Fast acetylase status
- 2- Slow acetylase status
- 3- Non compliance
- 4- Inadequate dose of Codeine
- 5- Interaction of codeine with paracetamol

Answer & Comments

Answer: 4- Inadequate dose of Codeine

Studies have shown that paracetamol 1g combined with codeine at dose of 60mg have the best analgesic outcomes.



[ Q: 1215 ] MRCPass - Clinical pharmacology

A 44 year old is on several immunosuppressants.

*Which one of the following is a calcineurin inhibitor?*

- 1- Sulphasalazine
- 2- Cyclophosphamide
- 3- Methotrexate
- 4- Cyclosporin
- 5- Azathioprine

Answer & Comments

Answer: 4- Cyclosporin

Examples of calcineurin inhibitors (CNIs) such as ciclosporin and tacrolimus.



[ Q: 1216 ] MRCPass - Clinical pharmacology

A 40 year old patient who has depression is being assessed. She was found to have a heart rate of 140. Upon enquiry she takes diazepam and dothiepin.

*What should be done next?*

- 1- Iv flumazenil
- 2- Iv naloxone
- 3- Echocardiogram
- 4- Electrocardiogram
- 5- Iv magnesium

Answer & Comments

Answer: 4- Electrocardiogram

Although neither drug on its own is particularly implicated for QT prolongation, the likelihood is increased in combination. An ECG is the best initial assessment for a patient with tachycardia to exclude ventricular arrhythmia.



[ Q: 1217 ] MRCPass - Clinical pharmacology

A 50 year old lady has a diagnosis of scleroderma. She complains of lethargy, anorexia, heartburn and weight loss. Her blood pressure is 150/100 on more than one occasion. Urine dipstick shows protein ++. Her investigations are as follows: urea is 9.5 mmol/l, Creatinine 125 umol/l, Na 138 mmol/l, K 4.2mmol/l.

*Which medication should be used to treat hypertension?*

- 1- Alpha blocker
- 2- Calcium antagonist
- 3- Thiazide
- 4- ACE inhibitor
- 5- Beta-blocker

Answer & Comments

Answer: 4- ACE inhibitor

Renal involvement in systemic sclerosis requires tight control of hypertension (which may worsen the renal impairment) and ACE inhibitors are the drugs of first choice.



[ Q: 1218 ] MRCPass - Clinical pharmacology

A 25 year old epileptic woman is now pregnant and in the second trimester. She has been taking sodium valproate for several years with good control of epilepsy.

*Which of the following is a significant risk with sodium valproate?*

- 1- Anaemia
- 2- Fetal neural tube defect
- 3- Hypoglycaemia
- 4- Weight gain
- 5- Abdominal striae

Answer & Comments

Answer: 2- Fetal neural tube defect

Sodium valproate is associated with a 1.5% risk of neural tube defects. This may be attributed in part to its effect in reducing serum folate. Other abnormalities with sodium valproate include: hypospadias, heart defects, craniofacial and skeletal anomalies, and developmental delay.



[ Q: 1219 ] MRCPass - Clinical pharmacology

A 35 year old man is brought to casualty from a nightclub where he had collapsed following ingestion of several tablets of ecstasy.

*Which of the following is a recognised side effect?*

- 1- Urinary incontinence
- 2- Constipation
- 3- Bradycardia
- 4- Hyperthermia
- 5- Crying

Answer & Comments

Answer: 4- Hyperthermia

The main effects of ecstasy intoxication are hypertension, tachycardia, increased respiratory rate, hyperthermia and increased sweating. More serious complications are malignant hyperthermia, liver failure and cerebral oedema.



[ Q: 1220 ] MRCPass - Clinical pharmacology

A 25 year old man attends casualty 12 hours after taking an overdose of 30 g of paracetamol and 5 tablets of 3mg codeine. On examination, he is drowsy with a Glasgow Come Scale of 13. His pulse is 110 beats per minute, blood pressure is 110/70 mmHg and

he has pinpoint pupils, with saturations of 98% on air.

*What is the best treatment option?*

- 1- Naloxone
- 2- N-acetylcysteine
- 3- Haemodialysis
- 4- Flumazenil
- 5- Activated charcoal

#### Answer & Comments

Answer: 2- N-acetylcysteine

Although the patient has pinpoint pupils, he had ingested 30g of paracetamol which is a toxic dose (lethal if > 30g in people with normal liver function). Hence N-acetylcysteine is the best management option. His GCS and respiratory rate (oxygen saturations) are not significantly compromised, otherwise naloxone would be the best option.



[ Q: 1221 ] MRCPass - Clinical pharmacology

A 30 year old man is on warfarin and is given advice regarding foods.

*Which one of these foods is a liver enzyme inhibitor?*

- 1- Rice
- 2- Potatoes
- 3- Grapefruit juice
- 4- Apple juice
- 5- Spinach

#### Answer & Comments

Answer: 3- Grapefruit juice

Grapefruit juice is an inhibitor of the enzyme cytochrome P450 3YA.



[ Q: 1222 ] MRCPass - Clinical pharmacology

A 30 year old lady has been on treatment for depression. She complains of constipation. On examination, she has a palpable goitre.

Her blood results are as follows:

Serum calcium 2.75 mmol/l

phosphate 0.7 mmol/l

TSH 18 mU/l

Free T<sub>4</sub> 8 pmol/l

*Which drug is likely to be responsible?*

- 1- Paroxetine
- 2- Amitriptyline
- 3- Citalopram
- 4- Lithium
- 5- Venlafaxine

#### Answer & Comments

Answer: 4- Lithium

Lithium can cause hypercalcaemia and hypothyroidism along with a goitre. The other side effects are fine tremor, weight gain, diabetes insipidus and cardiac arrhythmias.



[ Q: 1223 ] MRCPass - Clinical pharmacology

A 50 year old man presents with painless bilateral arm weakness and abdominal pain. On examination he has bilateral wrist drop.

*Which one of the following forms of poisoning is likely?*

- 1- Mercury
- 2- Lead
- 3- Arsenic
- 4- Carbon monoxide
- 5- Organophosphates



## Answer &amp; Comments

**Answer:** 2- Lead

Blood lead levels over 10 micrograms/dL can cause neurological damage. Peripheral neuropathy and bilateral wrist drop is classic. Severe lead poisoning can cause persistent vomiting, seizures, coma, and death.

Ingestion of lead-based paint is the most common source of lead poisoning in children.



[ Q: 1224 ] MRCPass - Clinical pharmacology

A 60 year old woman who is on several drugs has a potassium of 2.7 mmol/l.

*Which one of the following drugs is likely to cause hypokalaemia?*

- 1- Ramipril
- 2- Hydrochlorothiazide
- 3- Amiloride
- 4- Losartan
- 5- Spironolactone

## Answer &amp; Comments

**Answer:** 2- Hydrochlorothiazide

ACE inhibitor (ramipril), angiotensin receptor blocker (losartan), and potassium sparing diuretics (amiloride, spironolactone) cause hyperkalaemia. Thiazide diuretics do not contribute to hyperkalaemia.



[ Q: 1225 ] MRCPass - Clinical pharmacology

A 40 year old woman who has been taking NSAIDs has sudden deterioration of renal function.

*Which one of the following is the most likely effect of NSAIDs on the kidney?*

- 1- IgA nephropathy
- 2- Increased sensitivity to ADH

3- Amyloid deposition

4- Interstitial nephritis

5- Mesangial thinning

## Answer &amp; Comments

**Answer:** 4- Interstitial nephritis

NSAIDs may cause interstitial nephritis, glomerulonephritis and renal papillary necrosis.



[ Q: 1226 ] MRCPass - Clinical pharmacology

An 18 year old female attends casualty 6 hours after ingesting approximately 30g of Paracetamol and 360mg of Dihydrocodeine.

On examination, she is drowsy with a Glasgow Coma Scale of 12. Her pulse is 100 beats per minute, blood pressure is 110/66 mmHg and she has pinpoint pupils, with saturations of 96% on air.

*What is the most appropriate treatment for this patient?*

- 1- 10% Dextrose infusion
- 2- Activated charcoal by mouth
- 3- Gastric lavage
- 4- N-Acetylcysteine intravenously
- 5- Naloxone intravenously

## Answer &amp; Comments

**Answer:** 4- N-Acetylcysteine intravenously

The patient has decreased GCS but not severe enough for naloxone.

In this case NAC treatment early will reduce the likelihood of significant liver damage due to paracetamol poisoning.



[ Q: 1227 ] MRCPass - Clinical pharmacology

A 20 year old university student has been

hearing voices for a week. He thinks that his girlfriend is trying to kill him. A week ago he was at a disco and admits to having taken a substance.

*Which of these drugs could cause psychosis?*

- 1- Cocaine
- 2- LSD
- 3- Marijuana
- 4- Amphetamines
- 5- Antifreeze

#### Answer & Comments

Answer: 4- Amphetamines

Amphetamines (speed) is most likely to produce a schizophreniform type psychosis.



[ Q: 1228 ] MRCPass - Clinical pharmacology

A 28 year old patient with poorly controlled bipolar disorder is on 800 mg/day dose of lithium. She complains of going to the toilet frequently and also thirst.

*What should be done?*

- 1- Check thyroid function
- 2- Check calcium levels
- 3- Monitor electrolytes and fluid balance
- 4- Increase lithium doses
- 5- MRI of pituitary

#### Answer & Comments

Answer: 3- Monitor electrolytes and fluid balance

Side effects of lithium are - tremor, muscle weakness, hypothyroidism, hyperreflexia, ataxia, weight gain, leucocytosis, nephrogenic diabetes insipidus. This patient has nephrogenic diabetes insipidus, which can persist even if lithium is discontinued, for months or years. Hence the best management will be medium term management of fluid

balance (replacement if she becomes hypernatraemic or dehydrated from polyuria).



[ Q: 1229 ] MRCPass - Clinical pharmacology

A 80 year old lady has end stage ovarian carcinoma and has worsening significant abdominal pains. Her symptoms had been previously well controlled on oxycodone SR 40mg bd.

*What should the analgesia be altered to?*

- 1- Im morphine
- 2- Oral tramadol
- 3- Oral codeine
- 4- Prn oxycodone
- 5- Syringe driver with diamorphine

#### Answer & Comments

Answer: 5- Syringe driver with diamorphine

A syringe driver with the correct dose of diamorphine according to the amount of opiates the patient has had previously, with further stat doses as necessary of s/c diamorphine or oramorph can be used. Often antiemetics (cyclizine) are added as well.



[ Q: 1230 ] MRCPass - Clinical pharmacology

A 25 year old patient has the following results.

Sodium 122 mmol/l

Potassium 2.9 mmol/l

Urea 13 mmol/l

Creatinine 160 umol/l

Bicarbonate 12 mmol/l

*Which drug is likely to be responsible?*

- 1- Frusemide
- 2- Thiazide
- 3- Acetazolamide
- 4- Amiloride

## 5- Metolazone

## Answer &amp; Comments

Answer: 3- Acetazolamide

Acetazolamide (carbonic anhydrase inhibitor) can cause hyponatraemia, hypokalaemia, worsen renal impairment and also a metabolic acidosis. Thiazides tend to cause a metabolic alkalosis.



[ Q: 1231 ] MRCPass - Clinical pharmacology

A 60 year old lady presents to A&E with confusion, headache and tinnitus. Her GP has recently started her on an analgesic and there is concern she may have taken an overdose.

*Which of the following would most likely explain her symptoms?*

- 1- Dihydrocodeine
- 2- Diclofenac
- 3- Aspirin
- 4- Morphine sulphate tablets
- 5- Paracetamol

## Answer &amp; Comments

Answer: 3- Aspirin

Aspirin in excess can cause symptoms of nausea, vomiting, headache, confusion and tinnitus or hearing difficulties. Whilst the dihydrocodeine and MST could cause confusion, they would not cause the tinnitus.



[ Q: 1232 ] MRCPass - Clinical pharmacology

A 45 year old woman with COPD has severe bruising around her abdomen and upper limbs. She also has centripetal obesity and is hypertensive.

*Which of the following of her medication is the likely cause for her presentation?*

- 1- Tiotropium
- 2- Aminophylline
- 3- Prednisolone
- 4- Salbutamol
- 5- Atrovent

## Answer &amp; Comments

Answer: 3- Prednisolone

The patient has signs which would go with iatrogenic Cushing's syndrome caused by long term steroid therapy.



[ Q: 1233 ] MRCPass - Clinical pharmacology

A 30 year old man with G6PD deficiency has to be cautious when he need to take any medication.

*Which one of the following is associated with high risk of haemolysis in a patient with G6PD deficiency?*

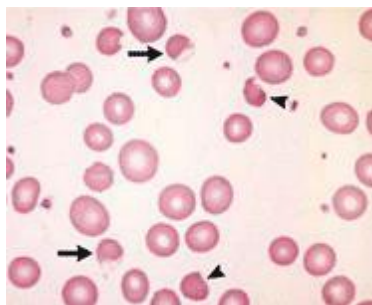
- 1- Amoxycillin
- 2- Trimethoprim
- 3- Nitrofurantoin
- 4- Metronidazole
- 5- Cefuroxime

## Answer &amp; Comments

Answer: 3- Nitrofurantoin

Drugs with high risk of haemolysis in Glucose-6-phosphate dehydrogenase are:

- dapsone
- methylene blue
- nitrofurantoin
- primaquine
- quinolones
- sulphonamides



Haemolysis in G6PD deficiency



[ Q: 1234 ] MRCPass - Clinical pharmacology

A 45 year old gentleman with type 2 diabetes mellitus is brought in following an overdose of oral hypoglycaemic agents. There is concern that he may have taken an overdose of metformin.

*Which of the following is the patient at risk of developing?*

- 1- Hyperglycaemia
- 2- Anaemia
- 3- Respiratory depression
- 4- Lactic acidosis
- 5- Methaemoglobinaemia

#### Answer & Comments

Answer: 4- Lactic acidosis

Metformin causes a type-B lactic acidosis in overdose (high anion gap), especially in patients who have co-ingested alcohol or who have underlying renal or hepatic dysfunction. Main symptoms of toxicity include gastrointestinal upset and a severe lactic acidosis. Hypoglycaemia is not often seen in metformin overdose. If lactic acidosis occurs following overdose, mortality is usually greater than 50%.



[ Q: 1235 ] MRCPass - Clinical pharmacology

A 66 year old woman presents with breathlessness. Chest X ray and inflammatory

markers suggest a chest infection. She is also in atrial fibrillation at a rate of 160/min. Her electrolytes are normal (K 4.2 mmol/l).

*As well as treating her pneumonia, she could be digitalised with:*

- 1- Two doses of Digoxin 0.5 mg orally with six hours in between
- 2- Digoxin 0.25 mg orally once daily
- 3- Digoxin 1.0 mg intravenously stat
- 4- Digoxin 0.125 mg orally once daily
- 5- Digoxin 0.25 mg orally three times daily

#### Answer & Comments

Answer: 1- Two doses of Digoxin 0.5 mg orally with six hours in between

The appropriate loading dose of Digoxin is two doses of 0.5 mg (or 500 mcg) with six hours in between, then a maintenance dose of 0.125 mg or 0.25 mg a day thereafter.



[ Q: 1236 ] MRCPass - Clinical pharmacology

A 62 year old woman has hypertension, congestive cardiac failure, osteoarthritis, urinary tract infections and depression. She now feels non specifically unwell. Blood tests show that she has acute renal failure, with serum creatinine 850 micromol/l. Renal biopsy shows acute interstitial nephritis.

*Which medication is most likely to be responsible for this condition?*

- 1- Atenolol
- 2- Lisinopril
- 3- Ibuprofen
- 4- Amitriptyline
- 5- Paracetamol

#### Answer & Comments

Answer: 3- Ibuprofen

The drugs that most commonly cause acute interstitial nephritis are penicillins, non-steroidal anti-inflammatory drugs and thiazide diuretics.



[ Q: 1237 ] MRCPass - Clinical pharmacology

A 55 year old man had suffered trauma to the lumbar spine from a car accident. He had spasticity and urinary symptoms. A drug was prescribed, several weeks later he developed jaundice.

*What is the drug which was used?*

- 1- Oxybutinin
- 2- Tizanidine
- 3- Baclofen
- 4- Diazepam
- 5- Ibuprofen

#### Answer & Comments

Answer: 2- Tizanidine

Tizanidine is an alpha 2 agonist drug. It is used to treat muscle spasms. Its side effects are nausea, anorexia and jaundice.



[ Q: 1238 ] MRCPass - Clinical pharmacology

A 35 year old lady with depression is unwell and brought to hospital by her friend. On examination, she had jaundice, dry mouth and was drowsy. She had a palpable bladder. Her friend mentioned that she may have taken an overdose.

*Which drug may have been taken?*

- 1- Paroxetine
- 2- Paracetamol
- 3- Ibuprofen
- 4- Amitriptyline
- 5- Codeine

#### Answer & Comments

Answer: 4- Amitriptyline

Patients who have taken an amitriptyline overdose may present with dilated pupils, dry mouth, drowsiness, sinus tachycardia, urinary retention (palpable bladder), increased tendon reflexes, and extensor plantar responses. Hepatitis can also occur with amitriptyline.



[ Q: 1239 ] MRCPass - Clinical pharmacology

A 44 year old patient with previous tonic clonic seizures is on sodium valproate 400mg bd.

*Which of the following is a common side-effect of sodium valproate?*

- 1- Gum hypertrophy
- 2- Weight loss
- 3- Hirsutism
- 4- Tremor
- 5- Thrombocytosis

#### Answer & Comments

Answer: 4- Tremor

Side effects of sodium valproate are tremor, weight gain, transient hair loss and thrombocytopenia.



[ Q: 1240 ] MRCPass - Clinical pharmacology

*Which of the following medications is an ADP receptor antagonist?*

- 1- Infliximab
- 2- Abxiciab
- 3- Tirofiban
- 4- Clopidogrel
- 5- Ezetimide

## Answer &amp; Comments

Answer: 4- Clopidogrel

Clopidogrel is an ADP receptor antagonist. Abxiciab and tirofiban are G2B3A antagonists which are also used in unstable coronary syndromes.



[ Q: 1241 ] MRCPass - Clinical pharmacology

A 50 year old man was found collapsed on the street. When in casualty, he was alert initially, but then develops a grand mal convulsion.

*Which is the most appropriate drug therapy?*

- 1- Carbamazepine 200mg bd orally
- 2- Phenobarbitone 10 mg/kg body weight, intravenously
- 3- Lorazepam 2 mg intravenously
- 4- Phenytoin intravenously at a rate of 100-150 mg
- 5- Diazepam 10 mg intravenously

## Answer &amp; Comments

Answer: 3- Lorazepam 2 mg intravenously

First-line treatment should be with intravenous benzodiazepine, with lorazepam preferred to diazepam because of its longer duration of action.



[ Q: 1242 ] MRCPass - Clinical pharmacology

A 18 year old student was admitted eight hours after taking an overdose of Diazepam 40mg, Methotrexate 400mg, which were her mother's medications.

On examination, her Glasgow Coma Score was 10/15.

*Which of the following is the most appropriate immediate action?*

- 1- Gastric lavage
- 2- Venous bicarbonate

3- Treat with folinic Acid

4- Assess respiratory function

5- U + E measurement

## Answer &amp; Comments

Answer: 4- Assess respiratory function

Her depressed GCS is likely to be due to diazepam. The most appropriate initial treatment would be to assess her respiratory function. Following this, she should be given folinic acid.

Methotrexate overdose is rare but potentially fatal hepatotoxicity and renal toxicity are reported. The appropriate treatment is folinic acid (Leucovorin). Leucovorin can reverse many effects of a methotrexate overdose but must be taken soon after the methotrexate was taken.



[ Q: 1243 ] MRCPass - Clinical pharmacology

A 45 year old man has right sided hemiparesis from a CVA sustained a month ago. He now has constant burning pains in the right arm and leg.

*Which of the following is likely to be effective in relieving his symptoms?*

- 1- Ibuprofen
- 2- Gabapentin
- 3- Tramadol
- 4- Oxycodone
- 5- Paracetamol

## Answer &amp; Comments

Answer: 2- Gabapentin

Although all the drugs can help from an analgesic point of view, the best drug to treat neuropathic pains is gabapentin. It resembles gaba aminobutyric acid, a pain inhibitor in the central nervous system, although its mode of action is unclear.





[ Q: 1244 ] MRCPass - Clinical pharmacology

A 40 year old patient presents with blurring of the vision. He is on various medications.

*Which one of the following drugs can cause visual disturbance, despite being within therapeutic range?*

- 1- Diltiazem
- 2- Digoxin
- 3- Lisinopril
- 4- Carbamazepine
- 5- Amiodarone

#### Answer & Comments

Answer: 5- Amiodarone

Digoxin which is the other possible option usually causes visual disturbance only in toxic doses. Amiodarone causes reversible corneal microdeposits.



[ Q: 1245 ] MRCPass - Clinical pharmacology

A 72 year old woman is assessed for visual disturbance. She complains of visual haloes and mild photophobia, which have been present for a few weeks.

*Which one of the following drugs is the most likely cause of her symptoms?*

- 1- Aspirin
- 2- Amlodipine
- 3- Amiodarone
- 4- Atenolol
- 5- Thiazide

#### Answer & Comments

Answer: 3- Amiodarone

Amiodarone may cause corneal microdeposits, and symptoms include visual haloes and photophobia.



Corneal Microdeposits seen with a slit lamp



[ Q: 1246 ] MRCPass - Clinical pharmacology

A 60 year old woman complains of nausea, vomiting, headache, confusion and tinnitus.

*What is she likely to have overdosed on?*

- 1- Codeine
- 2- Tramadol
- 3- Oramorph
- 4- Aspirin
- 5- Metoclopramide

#### Answer & Comments

Answer: 4- Aspirin

Aspirin in excess causes symptoms of nausea, vomiting, headache, confusion and tinnitus or hearing difficulties. Tinnitus is unusual with the other medications.



[ Q: 1247 ] MRCPass - Clinical pharmacology

A 50 year old man complains of pain and swelling in the chest wall.

*Which of the following drugs is likely to cause gynaecomastia?*

- 1- Atenolol
- 2- Frusemide
- 3- Cimetidine
- 4- Lansoprazole
- 5- Ramipril

## Answer &amp; Comments

**Answer:** 3- Cimetidine

Drugs which can cause gynaecomastia are :

- digoxin
- oestrogens
- spironolactone
- cimetidine
- verapamil
- nifedipine



[ Q: 1248 ] MRCPass - Clinical pharmacology

A 60 year old lady is on alendronate once a week.

*Which of the following best describes the mode of action of alendronate?*

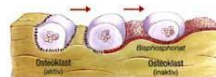
- 1- Binds vitamin D
- 2- Promotes collagen synthesis
- 3- Promotes bone matrix calcification
- 4- Inhibits osteoclastic activity
- 5- Inhibits osteoblastic activity

## Answer &amp; Comments

**Answer:** 4- Inhibits osteoclastic activity

Bisphosphonates acts at the cellular level. They act directly or indirectly on the osteoclasts. The effect can be on the formation of osteoclasts and/or on their activity. A decrease in osteoclast number can occur either through direct action on osteoclast precursors, or indirectly by

stimulating the osteoblasts to produce an inhibitor of osteoclast formation. Osteoclast inactivation is associated with bisphosphonate uptake from the bone surface. Furthermore, the bisphosphonates may act by shortening the life span of the osteoclasts, possibly through apoptosis.



1. Direct inhibition of osteoclasts when they take up bisphosphonate present on bone.



[ Q: 1249 ] MRCPass - Clinical pharmacology

A 48 year man has impotence. He also has a history of angina and hypertension.

*Which one of the following drugs which he takes would present a contraindication towards Sildenafil?*

- 1- Aspirin
- 2- Bendrofluazide
- 3- Isosorbide Mononitrate
- 4- Atenolol
- 5- Lisinopril

## Answer &amp; Comments

**Answer:** 3- Isosorbide Mononitrate

Nitrate use with Sildenafil (Viagra) are contraindicated due to precipitant drops in blood pressure. Viagra is also associated with increases in intraocular pressure and hence should be avoided in glaucoma.



[ Q: 1250 ] MRCPass - Clinical pharmacology

A man in his twenties is brought to the accident and emergency department by ambulance from a night club. He is has a GCS 5 with pin-point pupils and a slow respiratory rate.

*Immediate specific treatment should be:*

- 1- N-acetyl cysteine (150 mg/kg over 15 min) intravenously

- 2- Insert NG tube and give activated charcoal
- 3- Dextrose (50 ml of 50% solution) intravenously
- 4- Naloxone (0.4 mg) intravenously, repeated if no effect
- 5- Flumazenil 0.1mg/kg intravenously, repeated if no effect

#### Answer & Comments

**Answer:** 4- Naloxone (0.4 mg) intravenously, repeated if no effect

The likely diagnosis is (in view of the pinpoint pupils) opioid overdose, the treatment for which is intravenous naloxone (0.4 mg), repeated up to a total dose of 2 mg depending on clinical response.



[ Q: 1251 ] MRCPass - Clinical pharmacology

A 22 year old man has taken a cocaine overdose. He presents unwell to A&E.

*Which one of the following is a major side effect that should be observed for?*

- 1- Hypothermia
- 2- Convulsions
- 3- Jaundice
- 4- Hypotension
- 5- Hypotonia

#### Answer & Comments

**Answer:** 2- Convulsions

Convulsions, pyrexia, cardiorespiratory depression, hypertension, agitation and hypertonia are major side effects in cocaine toxicity.



[ Q: 1252 ] MRCPass - Clinical pharmacology

A 65 year old man with atrial fibrillation and mitral valve disease has been stable on

warfarin for many years. He is admitted with a severe epistaxis and his INR is found to be grossly elevated at 9.

*Recent prescription of which of the following drugs could explain this?*

- 1- Barbiturates
- 2- Phenytoin
- 3- Rifampicin
- 4- Ciprofloxacin
- 5- Griseofulvin

#### Answer & Comments

**Answer:** 4- Ciprofloxacin

Warfarin is metabolized by the cytochrome P450 enzyme system. Ciprofloxacin inhibits CYP450 (liver enzyme inhibitor) and hence potentiates the action of warfarin, which could explain this presentation with bleeding and high INR.



[ Q: 1253 ] MRCPass - Clinical pharmacology

A 28 year old Type I diabetic is currently on a basal-bolus regime, comprising twice a day basal Isophane insulin, complemented by short-acting insulin at meal times. He is exploring new insulin regimes as he works night shifts.

*Which form of insulin is recommended?*

- 1- Lispro
- 2- Mixtard 50
- 3- Mixtard 30
- 4- Actrapid
- 5- Insulin glargine

#### Answer & Comments

**Answer:** 5- Insulin glargine

Insulin glargine is a long-acting insulin analogue, produced by modifying the chemical structure of insulin. This gives it a

prolonged absorption profile with no peaks. When given at night, it provides good control of the fasting blood glucose and reduces the risk of hypoglycaemia



[ Q: 1254 ] MRCPass - Clinical pharmacology

A 60 year old man is unwell having ingested a bottle of dye. On examination, he is afebrile but has tachypnea, cyanosis, and drowsiness. He is given 100% oxygen but does not improve. A lab test confirms methaemoglobin levels >70%.

*What should be given?*

- 1- Hyperbaric oxygen
- 2- Ibuprofen
- 3- Haemodialysis
- 4- 10% glucose infusion
- 5- Methylene blue

#### Answer & Comments

Answer: 5- Methylene blue

Methaemoglobinaemia is a cause of cyanosis because it causes the formation of reduced Hb >1.5 g/dl. Chemicals which are oxidising agents may cause this e.g. aniline dyes, chlorates, nitrates, nitrophenols, primaquine and sulphonamides. Treatment is with methylene blue if methaemoglobin >3.0g/dL.



[ Q: 1255 ] MRCPass - Clinical pharmacology

A 60 year old patient with carcinoma of the colon has good pain control on MST 120 mg bd. She is admitted with increasing weakness and has difficulty with swallowing tablets. It is therefore decided to convert her to a 24-hour diamorphine syringe driver.

*The correct dose of diamorphine is:*

- 1- 160 mg with 30 mg prn
- 2- 160 mg with 20 mg prn

- 3- 160 mg with 10 mg prn
- 4- 80 mg with 15 mg prn
- 5- 80 mg with 1 mg prn

#### Answer & Comments

Answer: 4- 80 mg with 15 mg prn

The total morphine dose is 240mg. The 24 hour diamorphine dose should be 1/3 of the 24 hour morphine dose, which is 80mg. The PRN dose should be 1/6 of the total 24 hour diamorphine dose, which is 13.3mg, rounded up to 15 mg.



[ Q: 1256 ] MRCPass - Clinical pharmacology

*Which one of the following drugs is associated with both a raised anion and osmolar gap?*

- 1- Aspirin
- 2- Ethanol
- 3- Phenytoin
- 4- Cyanide
- 5- Metformin

#### Answer & Comments

Answer: 2- Ethanol

The anion gap is calculated as  $(Na^+ + K^+) - (Cl^- + HCO_3^-)$ . It is normally between 10 to 16.

Drug causes of a raised anion gap following overdose include ethanol, salicylates, paracetamol, metformin, cyanide and isoniazid.

Calculation of plasma osmolality is:  $2(Na^+ + K^+) + Urea + Glucose$ . Drug causes of a raised osmolar gap include ethanol, ethylene glycol and methanol.



[ Q: 1257 ] MRCPass - Clinical pharmacology

A 55 year old man who has rheumatoid arthritis is referred by the GP for lethargy. He has been on weekly injections.

A full blood count showed :

Hb 6.6 g/dl

MCV 82 fl

WCC  $0.8 \times 10^9/L$

Plt  $35 \times 10^9/L$

He has noticed a sore throat for 2 days and also observed a purpuric rash over his abdomen.

*Which of the following is the most likely drug to have caused this?*

- 1- Penicillamine
- 2- Ibuprofen
- 3- Gold
- 4- Etanercept
- 5- Infliximab

Answer & Comments

Answer: 3- Gold

The patient describes features of bone marrow suppression (anaemia, leukopenia and thrombocytopenia) induced by one of the disease modifying anti-rheumatic drugs (DMARDs). In this case, gold is most likely to be given as a weekly injection.



[ Q: 1258 ] MRCPass - Clinical pharmacology

A 70 year old caucasian patient was referred by the GP due to recordings of blood pressure of 180/100 mmHg initially and recordings of 170/95 and 170/90 when repeated 3 months later. Urine dipstick shows no protein and no blood.

*Which agent should be commenced?*

- 1- Atenolol

2- Bendrofluazide

3- Ramipril

4- Losartan

5- Moxonidine

Answer & Comments

Answer: 2- Bendrofluazide

In a patient of this age group a diuretic e.g. bendrofluazide should be commenced first. Following BHS criteria - Older and Black patients could have either a C (calcium channel blocker) or D (diuretic).



[ Q: 1259 ] MRCPass - Clinical pharmacology

A 22 year old lady who is on oral contraceptives is seeking advice regarding her medication.

*Which of the following may make the contraceptive LESS effective?*

- 1- Erythromycin
- 2- Ketoconazole
- 3- Isoniazid
- 4- Gliclazide
- 5- Valproate

Answer & Comments

Answer: 4- Gliclazide

Gliclazide is a sulphonylurea which is a liver enzyme inducer. The rest of the options are liver enzyme inhibitors.

LIVER ENZYME INDUCERS (PCBRAS):

- Phenytoin
- Carbamazepine
- Barbiturates
- Rifampicin
- Alcohol
- Sulphonylureas



[ Q: 1260 ] MRCPass - Clinical pharmacology

A 30 year old lady has taken overdoses of several drugs, and a casualty officer is considering administration of charcoal.

*Which of the following drugs would not be adsorbed by activated charcoal?*

- 1- Paracetamol
- 2- Salicylates
- 3- Theophylline
- 4- Digoxin
- 5- Lithium

Answer & Comments

Answer: 5- Lithium

Ethanol, ethylene glycol, iron, gold, mercury, lithium, many acids and alkalis are not adsorbed by activated charcoal. Activated charcoal binds most other drugs that are commonly used in poisonings.



[ Q: 1261 ] MRCPass - Clinical pharmacology

A 58 year old woman has been on Nifedipine for hypertension. She mentions several possible side effects which she blames the medication for.

*Which one of the following is a side effect with Nifedipine?*

- 1- Gum hypertrophy
- 2- Hirsutism
- 3- Bone marrow suppression
- 4- Dry cough
- 5- Weight loss

Answer & Comments

Answer: 1- Gum hypertrophy

Side effects of nifedipine are gum hyperplasia, headache, myalgia, tremors, cholestatic jaundice and visual disturbance.



[ Q: 1262 ] MRCPass - Clinical pharmacology

A 25 year old woman with no significant past medical history, presents 20 weeks into pregnancy with a painful swollen calf. Ultrasound examination confirms that she has a deep venous thrombosis.

*How should this be managed up to the time of delivery?*

- 1- Initiate and then continue treatment with warfarin until delivery
- 2- Initiate and then continue treatment with heparin until delivery
- 3- No anticoagulation
- 4- Initiate treatment with both heparin and warfarin and then continue until delivery
- 5- Initiate treatment with heparin, and convert to warfarin, continued until after delivery

Answer & Comments

Answer: 2- Initiate and then continue treatment with heparin until delivery

Warfarin in the first trimester can cause fetal hypoplasia of the nose and limbs. After this period warfarin is associated with neurological damage - mental retardation, microcephaly, optic atrophy and blindness. There is an option to convert from heparin to warfarin in the third trimester, but the patient will have to be re-converted back to heparin before delivery.



[ Q: 1263 ] MRCPass - Clinical pharmacology

A 60 year old man with adenocarcinoma of the colon has been taking morphine sulphate continus (MST) 100 mg B.d. for 3 months.



Following a course of chemotherapy including oxaliplatin and 5 Fluorouracil, he developed a 2 day history of acute frequent diarrhoea.

The diarrhoea discontinued but he presents with a 5 day history of drowsiness, lethargy and ankle oedema.

Examination reveals pin point pupils.

*What is the most likely cause of the symptoms?*

- 1- Metastatic disease
- 2- Interaction between chemotherapy and morphine
- 3- Excessive antiemetic use
- 4- Renal failure leading to accumulation of morphine
- 5- Liver failure due to opiates

#### Answer & Comments

**Answer:** 4- Renal failure leading to accumulation of morphine

Renal failure can accentuate the effects of opiates as in this instance, leading to drowsiness and pinpoint pupils. In this case the diarrhoea may have been caused by chemotherapy.



[ Q: 1264 ] MRCPass - Clinical pharmacology

A 60 year old woman with atrial fibrillation and previous transient ischaemic attacks has been on warfarin for several years. She complains of excessive bleeding and presents for a review . The INR result was 9. Upon further enquiry, she mentions having been on a new drug recently.

*Which of the following is the most likely cause?*

- 1- Carbamazepine
- 2- Ciprofloxacin
- 3- Theophylline
- 4- Sulphonylurea

5- Rifampicin

#### Answer & Comments

**Answer:** 2- Ciprofloxacin

Liver enzyme inhibitors are omeprazole, disulfiram, erythromycin, valproate, isoniazid, cimetidine, ciprofloxacin, ethanol and sulphonamides.



[ Q: 1265 ] MRCPass - Clinical pharmacology

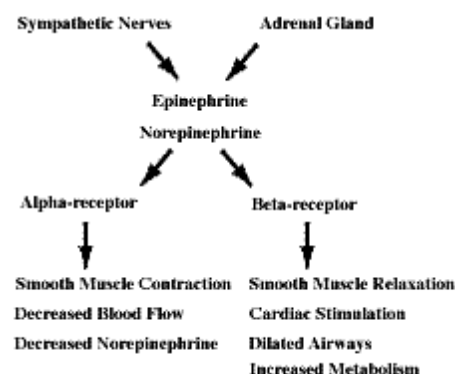
receptor blockers are used in hypertension and prostate hypertrophy.

*Which one of the following occurs with stimulation of alpha receptors?*

- 1- Bronchoconstriction
- 2- Increase in gut motility
- 3- Vasoconstriction
- 4- Uterus relaxation
- 5- Increase in pancreatic exocrine secretion

#### Answer & Comments

**Answer:** 3- Vasoconstriction



[ Q: 1266 ] MRCPass - Clinical pharmacology

A 60 year old lady who has significant respiratory disease is on long term steroids. Her bone mineral density is low . She has been commenced on vitamin D and calcium supplements.

*Which of the following would most likely be recommended as treatment for corticosteroid-induced osteoporosis?*

- 1- Vitamin A
- 2- Vitamin C
- 3- Infliximab
- 4- Hormone replacement therapy
- 5- Erythropoietin

#### Answer & Comments

Answer: 4- Hormone replacement therapy

Hormone replacement therapy should be recommended for postmenopausal women, unless contraindicated.

Although calcium does not completely suppress bone loss, patients given high-dose inhaled or systemic corticosteroids should have a calcium intake of at least 1,000 mg/day. Patients receiving limited sun exposure, especially during the winter, may benefit from supplements containing 400 IU/day of vitamin D. Although supplemental calcium and vitamin D may counteract the effects of corticosteroids on calcium transport, studies have shown that they do not completely eliminate corticosteroid-induced bone loss.



[ Q: 1267 ] MRCPass - Clinical pharmacology

A 60 year old woman has increasing frequency of migraine attacks despite NSAIDs, and has been referred for further treatment.

*Which one of the following drugs would be appropriate for acute treatment against migraine?*

- 1- Sodium valproate
- 2- Propranolol
- 3- Amitriptyline
- 4- Pizotifen
- 5- Sumatriptan

#### Answer & Comments

Answer: 5- Sumatriptan

Sumatriptan is a 5HT<sub>1</sub> agonist and may be useful in the treatment of acute migraine attacks. is available in injectable, intranasal, and oral formulations. Ergotamine tartrate is also effective in acute migraine. Propanolol, valproate, NSAIDs, amitriptyline, pizotifen and gabapentin are effective as prophylactic drugs in migraine.



[ Q: 1268 ] MRCPass - Clinical pharmacology

A 70 year old man has a creatinine of 350 umol/l.

*Which one of the following drugs is likely to worsen the renal failure?*

- 1- Erythromycin
- 2- Sulfasalazine
- 3- Paracetamol
- 4- Olanzapine
- 5- Omeprazole

#### Answer & Comments

Answer: 2- Sulfasalazine

Sulfasalazine, NSAIDs, allopurinol, and ACE inhibitors are examples of nephrotoxic drugs.



[ Q: 1269 ] MRCPass - Clinical pharmacology

A 35 year old man presents following an overdose with amitriptyline and anticholinergic syndrome is suspected.

*Which one of the following is likely?*

- 1- Urinary incontinence
- 2- Mydriasis
- 3- Pale skin
- 4- Bradycardia
- 5- The patient is calm

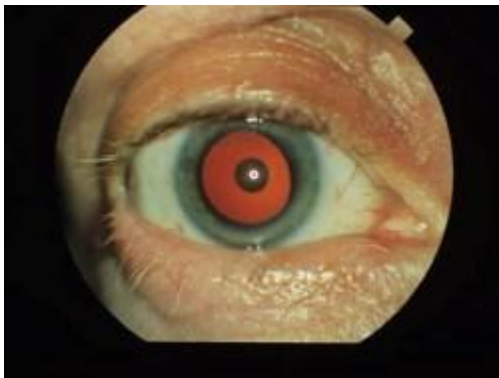
## Answer &amp; Comments

**Answer:** 2- Mydriasis

Anticholinergic syndrome occurs following overdose with drugs that have anticholinergic activity.

Examples of these are tricyclic antidepressants, antihistamines and atropine.

Features include flushed skin, urinary retention, tachycardia, mydriasis (dilated pupils) and agitation. Although physostigmine, a reversible inhibitor of acetylcholinesterase, is effective in treating symptoms, there is a significant risk of cardiac toxicity (bradycardia, AV conduction defects and asystole).



Mydriasis



[ Q: 1270 ] MRCPass - Clinical pharmacology

A 55 year old man of African origin presents with blood pressure 210/100mmHg. Urinalysis is negative and fundoscopy shows AV nipping.

*Which of the following treatment options is most appropriate?*

- 1- Urgent admission for control of malignant hypertension
- 2- Oral enalapril 10mg bd if hypertension confirmed over 1-2 weeks
- 3- Oral atenolol 50mg od if hypertension confirmed over 1-2 weeks
- 4- Oral nifedipine LA 30mg od if hypertension confirmed over 1-2 weeks

- 5- Oral nifedipine capsules 20mg tds if hypertension confirmed over 1-2 weeks

## Answer &amp; Comments

**Answer:** 4- Oral nifedipine LA 30mg od if hypertension confirmed over 1-2 weeks

The British Hypertension Society guidelines suggest that the finding of blood pressure 200-219/110-119mmHg should be confirmed with repeat measurements after 1-2 weeks, then treated if still elevated.

Black patients have low renin hypertension, therefore ACE inhibitors and  $\beta$ -blockers as single agents are less effective in this group. Calcium channel blockers and diuretics are effective agents. Nifedipine should be used as a long-acting preparation, not a short acting one.



[ Q: 1271 ] MRCPass - Clinical pharmacology

Clozapine is an atypical antipsychotic drug that has fewer side effects than older antipsychotics.

*This is because of:*

- 1- Decreased neurotransmitter release
- 2- Low affinity for 5HT receptors
- 3- Low affinity for dopamine D2 receptors
- 4- It does not cause agranulocytosis
- 5- There is better renal clearance

## Answer &amp; Comments

**Answer:** 3- Low affinity for dopamine D2 receptors

Clozapine has fewer extrapyramidal adverse effects than older antipsychotics. This has been attributed to its relatively low affinity for D2 dopamine receptors. Unlike older antipsychotics, clozapine has relatively high affinity for 5HT receptors. Agranulocytosis is a recognized complication of clozapine.



[ Q: 1272 ] MRCPass - Clinical pharmacology

A 60 year old patient has recently been commenced on digoxin.

*Which of the following features is likely to suggest digoxin toxicity?*

- 1- Vomiting
- 2- Reverse tick in the lateral leads on ECG
- 3- Blindness
- 4- Chest pain
- 5- Supraventricular ectopics

Answer & Comments

Answer: 1- Vomiting

Digoxin toxicity can cause symptoms of nausea and vomiting, xanthopsia (yellowness in vision), dizziness, bradycardia and lethargy. Reversed tick in the ST segments can be associated with digoxin use and is not necessarily a sign of toxicity.



[ Q: 1273 ] MRCPass - Clinical pharmacology

A 65 year old lady presents with transient loss of vision which lasts half an hour. She has a past medical history of hypertension. Her ECG confirms atrial fibrillation.

*Which one of the following therapy is most appropriate?*

- 1- Aspirin
- 2- Aspirin and dipyridamole
- 3- Aspirin and clopidogrel
- 4- Clopidogrel
- 5- Warfarin

Answer & Comments

Answer: 5- Warfarin

In a patient with previous TIA or CVA and atrial fibrillation, warfarinisation must be

considered unless there are contraindications. Using the CHADS-2 score, the patient scores 1 for a TIA, and 1 for Hypertension - a score of 2 and above suggests warfarin is appropriate.



[ Q: 1274 ] MRCPass - Clinical pharmacology

A 35 year old lady has an aspirin overdose. She is hyperventilating and complains of tinnitus.

*What should be given?*

- 1- N acetyl cysteine
- 2- Oil of wintergreen
- 3- Activated charcoal
- 4- Naloxone
- 5- Methylene blue

Answer & Comments

Answer: 3- Activated charcoal

Initially after a salicylate overdose, hyperventilation due to respiratory drive stimulation causes a respiratory alkalosis. This is followed by metabolic acidosis. Oil of wintergreen contains salicylates. Management includes repeated doses of activated charcoal until plasma salicylate concentrations have peaked.



[ Q: 1275 ] MRCPass - Clinical pharmacology

A 60 year woman has rheumatoid arthritis. She states that she is allergic to Co-trimoxazole.

*Which of the following DMARDs should not be used?*

- 1- Gold
- 2- Penicillamine
- 3- Methotrexate
- 4- Sulfasalazine
- 5- Hydroxychloroquine

## Answer &amp; Comments

**Answer:** 4- Sulfasalazine

Co-trimoxazole is trimethoprim and sulfamethoxazole. The patient is allergic to sulphonamides.



[ Q: 1276 ] MRCPass - Clinical pharmacology

A 15 year old asthmatic patient who has been given theophylline is now tachycardic with a heart rate of 130 beats per minutes.

*What is the mechanism of action of the drug?*

- 1- Adenosine receptor antagonism
- 2- B1 receptor stimulation
- 3- Alpha receptor agonist
- 4- Leukotriene inhibitor
- 5- Anticholinergic

## Answer &amp; Comments

**Answer:** 1- Adenosine receptor antagonism

Theophylline is a methylxanthine which is a phosphodiesterase enzyme inhibitor. This action increases cyclic AMP levels. It is also an antagonist of adenosine receptors.



[ Q: 1277 ] MRCPass - Clinical pharmacology

A 65 year old man has cardiac risk factors of hypertension and is on aspirin. Echocardiography shows reduced ejection fraction at 50%.

*Which one medication may reduce the risk of future cardiovascular events?*

- 1- Furosemide
- 2- Isosorbide mononitrate
- 3- Ramipril
- 4- Verapamil
- 5- Clopidogrel

## Answer &amp; Comments

**Answer:** 3- Ramipril

In patients with reduced ejection fraction, ACE - inhibitors have been shown to reduce cardiovascular events (CVA and MI) and mortality. There are many trials with ACE-inhibitors including SOLVD (enalapril), ISIS-4 (captopril) and HOPE (ramipril) trials.



[ Q: 1278 ] MRCPass - Clinical pharmacology

An 18 year old student is admitted with severe crushing central chest pain with associated nausea and profuse sweating. He admits to smoking cocaine.

*What is the mechanism of myocardial ischaemia?*

- 1- Coronary thrombosis
- 2- Tachycardia
- 3- Alpha receptor blockade
- 4- Coronary vasospasm
- 5- Parasympathetic activity

## Answer &amp; Comments

**Answer:** 4- Coronary vasospasm

Cocaine causes coronary vasospasm sufficient to present as severe ischaemia.

Cocaine causes an increase in circulating catecholamines. Therefore alpha-adrenergic mediated focal or generalized coronary artery spasm has been presumed to be the likely mechanism to induce ischemia.



[ Q: 1279 ] MRCPass - Clinical pharmacology

A 43 year old lady with known liver cirrhosis has now been found to have a post prandial glucose of 16 and had been high on two previous occasions.

*What drug should be commenced?*

- 1- Preprandial insulin
- 2- Metformin
- 3- Rosiglitazone
- 4- Gliclazide
- 5- Acarbose

#### Answer & Comments

Answer: 4- Gliclazide

Type 2 diabetes in liver cirrhotic patients respond well to sulfonylureas which enhance peripheral tissue sensitivity to insulin. This should be considered first and insulin subsequently added when glycaemic control is not achieved.



[ Q: 1280 ] MRCPass - Clinical pharmacology

A 60 year old man with elevated cholesterol has failed to reach a desired cholesterol level on statin treatment.

The endocrinologist suggests ezetimibe.

*Which of the following is an effect of ezetimibe?*

- 1- Elevation in plasma triglyceride
- 2- Decreased absorption of fat soluble vitamins
- 3- Reduction in high density lipoprotein (HDL)
- 4- Reduction in low-density lipoprotein (LDL)
- 5- Prevents cholesterol synthesis

#### Answer & Comments

Answer: 4- Reduction in low-density lipoprotein (LDL)

Ezetimibe acts by prevent cholesterol absorption from the small intestine. Typically it reduces LDL-cholesterol by approximately 20%, triglycerides by up to 5% and raises HDL-cholesterol by approximately 5%. It does not inhibit the absorption of fat-soluble vitamins unlike the anionexchange resins (e.g.

colestyramine). Ezetimibe is currently licensed for use in combination with a statin in patients who fail to reach desired lipid profiles or as monotherapy in patients intolerant to a statin.



[ Q: 1281 ] MRCPass - Clinical pharmacology

*Frusemide (furosemide) acts on which part of the kidney?*

- 1- Bowman's capsule
- 2- Ascending loop of Henle
- 3- Descending loop of Henle
- 4- Distal convoluted tubule
- 5- Proximal convoluted tubule

#### Answer & Comments

Answer: 2- Ascending loop of Henle

Frusemide acts on the thick portion of the ascending loop of Henle. It inhibits Na<sup>+</sup> and Cl<sup>-</sup> reabsorption there via Na<sup>+</sup>, K<sup>+</sup>, -ATPase-dependent pump. Owing to the large NaCl absorptive capacity of the loop of Henle, agents that act at this site produce a diuretic effect much greater than that seen with other diuretic groups.



[ Q: 1282 ] MRCPass - Clinical pharmacology

A 25 year old lady has with multiple sclerosis is considered for β-interferon by her neurologist. She has relapsing episodes of decreasing mobility and bladder dysfunction.

*When is beta interferon recommended?*

- 1- First onset of the disease
- 2- When there is urinary incontinence
- 3- Chronic progressive multiple sclerosis
- 4- Relapsing remitting multiple sclerosis
- 5- During a relapse



## Answer &amp; Comments

**Answer:** 4- Relapsing remitting multiple sclerosis

$\beta$ -interferon is not commenced during the first event seen. It is a long term treatment (as opposed to steroids for acute relapses) which is of benefit only in the relapsing remitting form (about 40% of MS patients have this form), and slows progression of disability and reduces demyelinating lesions.



[ Q: 1283 ] MRCPass - Clinical pharmacology

A 50 year old lady is given methotrexate for severe rheumatoid disease causing joint pains and functional limitation. She also has to be given folinic rescue therapy.

*What is the mechanism by which methotrexate acts?*

- 1- Increasing folic acid excretion
- 2- DNA binding
- 3- Binding to dihydrofolate reductase
- 4- Increasing nucleotide synthesis
- 5- Inhibiting DNA gyrase

## Answer &amp; Comments

**Answer:** 3- Binding to dihydrofolate reductase

Binding of methotrexate to dihydrofolate reductase reduces nucleotide synthesis as well as amino acids serine and methionine. Folinic acid rescue is usually given after methotrexate therapy (e.g. 24 hours) to reduce myelosuppression side effects.



[ Q: 1284 ] MRCPass - Clinical pharmacology

A 46 year old patient was found unconscious by a friend and brought to hospital. On examination he smelled of alcohol and had a GCS of 5/15.

Investigations showed:

sodium 137 mmol/l

potassium 4.3 mmol/l

urea 25 mmol/l

creatinine 360  $\mu$ mol/l

Creatine Kinase 11,000 U/l

*What is the diagnosis?*

- 1- Alcohol intoxication
- 2- Tricyclic antidepressant overdose
- 3- Methaemoglobinaemia
- 4- Rhabdomyolysis
- 5- Cocaine overdose

## Answer &amp; Comments

**Answer:** 4- Rhabdomyolysis

The likely diagnosis is ethylene glycol poisoning, the clue being the alcohol smell. There are many causes of rhabdomyolysis, such as trauma and burns, sepsis and drug overdose.



[ Q: 1285 ] MRCPass - Clinical pharmacology

A 40 year old lady is being considered for treatment for rheumatoid arthritis.

*Which of the following is a disease modifying anti rheumatic drug?*

- 1- Mercury
- 2- Phenylephrine
- 3- Silver
- 4- Sulfasalazine
- 5- Benzoyl peroxide

## Answer &amp; Comments

**Answer:** 4- Sulfasalazine

DMARDs include gold, chloroquine, sulfasalazine, penicillamine, methotrexate, azathioprine and leflunomide.



[ Q: 1286 ] MRCPass - Clinical pharmacology

*Which one of following drugs works by inhibiting tumour necrosis factor?*

- 1- Cyclosporin
- 2- Methotrexate
- 3- Montelukast
- 4- Infliximab
- 5- Mesalazine

#### Answer & Comments

Answer: 4- Infliximab

Etanercept and infliximab inhibit TNF. They are licensed in the treatment of rheumatoid arthritis.





## [ Q: 1287 ] MRCPass - Cardiology

A 60 year man who is type 2 diabetic is admitted with chest pain. His ECGs show inferior ST elevation of 1 mm in 2 leads. He is thrombolysed with streptokinase. His BM measurement is 15, and has missed his gliclazide dose today.

*What is the best management?*

- 1- Continue with gliclazide
- 2- PRN actrapid to keep the BMs controlled
- 3- Iv sliding scale insulin
- 4- Commence metformin
- 5- Ignore the BMs and focus on his cardiac side

## Answer &amp; Comments

Answer: 3- Iv sliding scale insulin

The DIGAMI study compared "conventional" anti-diabetic therapy to intensive insulin therapy consisting of acute insulin infusion during the early hours of MI and thrice-daily subcutaneous insulin injection for the remainder of the hospital stay and a minimum of 3 months thereafter. For patients with insulin and better glycaemic control, mortality of patients were decreased at one year.



## [ Q: 1288 ] MRCPass - Cardiology

A 55 year old patient presented with breathlessness and ankle oedema. The blood pressure is 135/80 mmHg. On examination, her JVP rises with inspiration. She has a soft systolic murmur and a third heart sound.

Blood tests reveal a Hb 10.5 g/dl, WCC  $7.5 \times 10^9/L$ , Platelets  $150 \times 10^9/L$ , sodium 136 mmol/l, potassium 3.5 mmol/l, creatinine 140  $\mu\text{mol/l}$ , urea 6  $\mu\text{mol/l}$ .

ECG shows poor R wave progression. An echocardiogram shows no pericardial effusion, the ventricles are stiff and systolic function is mildly impaired.

*Which of the following is the likely diagnosis?*

- 1- Restrictive cardiomyopathy
- 2- Dilated cardiomyopathy
- 3- Constrictive pericarditis
- 4- Ischaemic cardiomyopathy
- 5- Pulmonary embolus

## Answer &amp; Comments

Answer: 1- Restrictive cardiomyopathy

In this scenario, the symptoms can be caused by any form of cardiomyopathy. The rise in JVP with inspiration suggests either constrictive or restrictive cardiomyopathy.

Echocardiography showing no pericardial effusion and stiffness suggests restrictive rather than constrictive cardiomyopathy. The transmitral dopplers on the echo may show E/A wave reversal and high velocities which may suggest restrictive picture.

This may be due to infiltration due to haemochromatosis, endomyocardial fibrosis, sarcoidosis, myeloma, lymphoma or connective tissue disease.



## [ Q: 1289 ] MRCPass - Cardiology

A 40 year old patient had a mitral valve replacement for mitral stenosis 1 month ago. She presents with fevers, lethargy and rigor.

Her blood tests reveal Hb 9.5 g/dl, WCC  $13 \times 10^9/L$ , platelets  $500 \times 10^9/L$ , sodium 136 mmol/l, potassium 4.2 mmol/l, ESR 90 mm/hr, CRP 180 mg/l.

She also has 2 splinter haemorrhages and 2+ of blood on urine dipstick. 3 sets of blood cultures are taken.

*Which of the following organisms is most likely to be grown in the blood cultures?*

- 1- E coli
- 2- Listeria monocytogenes
- 3-  $\beta$  haemolytic Group A streptococcus

4- Klebsiella

5- Staphylococcus epidermidis

#### Answer & Comments

Answer: 5- Staphylococcus epidermidis

In a patient with prosthetic valve, causes can be divided into early (within 60 days of surgery) and late stages.

Early prosthetic valve endocarditis is usually the result of perioperative contamination. Causative organisms include Staphylococcus epidermidis (30%), Staphylococcus aureus (20%), and gram-negative aerobes (20%).

Late prosthetic valve endocarditis is usually the result of bacteremia from dental or genitourinary sources, GI surgery, or intravenous drug abuse. The causative organisms are similar to those causing native valve endocarditis. These include Streptococcus viridans (30%), S epidermidis (30%) and S aureus (12%).



#### [ Q: 1290 ] MRCPass - Cardiology

A 65 year old lady has ischaemic cardiomyopathy and symptoms of breathlessness walking up one flight of steps. Her breath sounds are clear. Chest X ray shows cardiomegaly and clear lung fields. She is currently on frusemide 40mg bd and perindopril 4 mg at night.

*What medication should be added?*

- 1- Spironolactone
- 2- Carvedilol
- 3- Digoxin
- 4- Amiodarone
- 5- Diltiazem

#### Answer & Comments

Answer: 2- Carvedilol

The two best options are carvedilol and spironolactone. Both B blocker trials (CIBIS II, Merit HF, Copernicus) and spironolactone trials (RALES) have shown symptomatic improvement and decreased mortality.

In this patient with little signs of fluid overload, a beta blocker can be started first, and then spironolactone added as well.



#### [ Q: 1291 ] MRCPass - Cardiology

A 55 year old man has progressive shortness of breath and ankle oedema. He has come from Africa originally and gives a history of probably tuberculosis many years ago.

On examination, he has a blood pressure of 105/55 mmHg, raised JVP +6 cm with a rapid y descent and significant ankle oedema.

*What is the likely diagnosis?*

- 1- Cardiac tamponade
- 2- Aortic regurgitation
- 3- Restrictive cardiomyopathy
- 4- Pericardial constriction
- 5- Left ventricular impairment causing heart failure

#### Answer & Comments

Answer: 4- Pericardial constriction

The signs of pericardial constriction / constrictive pericarditis are rapid y descent, raised JVP and Kussmaul's sign.

The y descent is often blunted in cardiac tamponade. A further clue is the history of tuberculosis which predisposes to constrictive pericarditis.



#### [ Q: 1292 ] MRCPass - Cardiology

A 75 year old man has become progressively more breathless. On examination he has a displaced cardiac apex and a third heart sound. Chest XR confirms cardiomegaly. An echocardiogram shows Left

ventricle size of 6.5 cm (<6cm) and LV ejection fraction of 25%. He is on Frusemide, Perindopril and spironolactone.

*Which of the following drugs should be added to his current therapy?*

- 1- Diltiazem
- 2- Verapamil
- 3- Atorvastatin
- 4- Ezetimide
- 5- Bisoprolol

#### Answer & Comments

Answer: 5- Bisoprolol

The CIBIS trial showed that bisoprolol showed improvement in functional status and reduced hospitalisation. Mortality however, was not decreased on bisoprolol in this trial. There are other trials which have shown a small mortality benefit for beta blockers in heart failure. Other B blockers which can be used are metoprolol (MERIT HF study) and carvedilol.



#### [ Q: 1293 ] MRCPass - Cardiology

A 50 year old man has suffered an uncomplicated myocardial infarct 3 days ago and at the moment he has no problems. He is a tourist and wishes to travel back home as soon as possible.

*How soon after an uncomplicated myocardial infarct may a patient travel by flight safely?*

- 1- 3 days
- 2- 14 days
- 3- 4 weeks
- 4- 2 months
- 5- 3 months

#### Answer & Comments

Answer: 2- 14 days

A patient should be fit to fly 14 days after an uncomplicated myocardial infarct, after normal activities have been resumed. For complicated MIs, the patient has to wait until symptoms stabilise. Coronary artery bypass graft and other chest surgery - recommended wait about 2 weeks so that any air introduced into chest will have become absorbed.



#### [ Q: 1294 ] MRCPass - Cardiology

A 65 year old man has an angioplasty to the left anterior descending artery.

*In considering medical therapy, which of the following reduces restenosis rates following angioplasty?*

- 1- Angiotensin converting enzyme inhibitors
- 2- Abciximab
- 3- Beta blockers
- 4- Low-molecular weight heparin
- 5- Pravastatin

#### Answer & Comments

Answer: 2- Abciximab

There is some data to suggest that the use of the anti-platelet glycoprotein IIb/IIIa receptor blocker (abciximab) may reduce the risk of restenosis in both diabetic and non-diabetic patients.



#### [ Q: 1295 ] MRCPass - Cardiology

A 50 year old man presents with palpitations. His ECG shows AV dissociation.

*Which of the following conditions is most likely to cause AV dissociation on an ECG?*

- 1- 1st degree AV block
- 2- Atrial flutter
- 3- Mobitz type II block
- 4- Wenkebach
- 5- Complete heart block



## Answer &amp; Comments

**Answer:** 5- Complete heart block

Complete (3rd degree) heart block and ventricular tachycardia are most likely to cause AV dissociation on an ECG.



[ Q: 1296 ] MRCPass - Cardiology

A 60 year old man has palpitations. An admission ECG shows QTc prolongation of 0.48 s.

*Which of the following conditions might be associated?*

- 1- Digitalis
- 2- Hyponatraemia
- 3- Hyperthermia
- 4- Hypocalcaemia
- 5- Hyperkalaemia

## Answer &amp; Comments

**Answer:** 4- Hypocalcaemia

Hypokalaemia, hypocalcaemia, hypomagnesaemia and hypothermia can cause prolonged QT interval on the ECG. Prolonged QT is classified as a QTc interval (corrected) of more than 0.44 seconds.



[ Q: 1297 ] MRCPass - Cardiology

A 45 year old man has chest pain walking up hills.

*Which of the following investigations is the best for risk stratification of angina?*

- 1- ECG
- 2- Troponin T
- 3- Echocardiogram
- 4- Coronary angiogram
- 5- Thallium myocardial perfusion scan

## Answer &amp; Comments

**Answer:** 2- Troponin T

The high risk factors are positive troponin and dynamic ST depression on ECG with angina.

Those in the high risk group should be referred for urgent coronary angiography.



[ Q: 1298 ] MRCPass - Cardiology

A 65 year old man has palpitations. He has a broad complex tachycardia on the ECG. In a broad complex tachycardia.

*Which of the following would be the strongest indication towards a diagnosis of VT?*

- 1- Discordant QRS complexes in the chest leads
- 2- Extreme right axis deviation
- 3- Hemodynamic instability
- 4- Trifascicular block on ECG
- 5- Cannon a waves

## Answer &amp; Comments

**Answer:** 5- Cannon a waves

Any evidence of AV dissociation such as cannon a waves effectively rules out a supraventricular tachycardia. Features suggestive of VT, rather than SVT with bundle branch block are:

- cannon a waves on JVP
- fusion and/or capture beats
- Left axis deviation
- QRS duration > 140 msec
- concordance of the QRS complexes in the chest leads
- history of ischaemic heart disease



## [ Q: 1299 ] MRCPass - Cardiology

A 20 year old university student complains of palpitations which last 10 minutes and are irregular. He has had three episodes over the past year and has come to outpatients to be assessed. He is aware of the palpitations but does not feel unwell. His ECG shows delta waves.

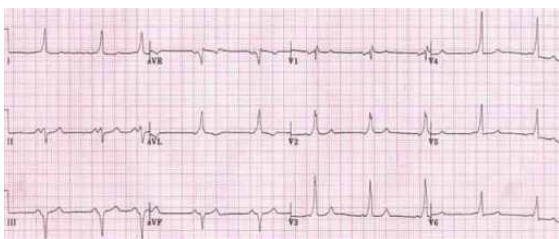
*What should be the next course of action?*

- 1- Discharge and no further investigation
- 2- Routine referral to a cardiologist
- 3- He is high risk and needs admission into hospital
- 4- Routine DC cardioversion
- 5- Anticoagulation

## Answer &amp; Comments

**Answer:** 2- Routine referral to a cardiologist

He is in sinus rhythm at the moment. The delta waves and short PR interval suggests Wolff Parkinson White syndrome. He needs a referral to a cardiologist to discuss ablation of accessory pathway, and should have a 24 hour tape and echocardiogram.



Short PR interval and delta waves



## [ Q: 1300 ] MRCPass - Cardiology

A 75 lady was found to have Atrial Fibrillation on her ECG. She has a history of hypertension. The rate was 85 min and BP was 140/85 mmHg.

*What management should be considered next?*

- 1- Digoxin

- 2- Aspirin
- 3- Warfarin
- 4- DC cardioversion
- 5- Atenolol

## Answer &amp; Comments

**Answer:** 3- Warfarin

The patient's heart rate is not fast. She scores 2 on the CHADS<sub>2</sub> score (she is above age 65 and she has hypertension) there is a significant benefit in formal anticoagulation with warfarin in view of the risk of thromboembolism



## [ Q: 1301 ] MRCPass - Cardiology

A 30 year old patient complains of dizzy spells. Upon admission, he has an ECG which shows a PR interval of 0.6s and QT interval of 0.5s.

*Which one of the following medications could be responsible?*

- 1- Aspirin
- 2- Amoxycillin
- 3- Terfenadine
- 4- Digoxin
- 5- Acetazolamide

## Answer &amp; Comments

**Answer:** 3- Terfenadine

A QT interval of >0.45 is prolonged. Common drugs are tricyclic antidepressants (eg. amitryptiline), quinidine, erythromycin, amiodarone, phenothiazines (chlorpropamide), antihistamines (terfenadine) and grapefruit juice.



## [ Q: 1302 ] MRCPass - Cardiology

A 65 year old man with diabetes mellitus has a blood pressure of 190/90 mmHg. Clinical examination was normal.

An ECG reveals evidence of left ventricular hypertrophy.

*Which one of the following drugs appropriate treatment for hypertension?*

- 1- Sodium nitroprusside
- 2- Labetalol
- 3- Atenolol
- 4- Doxazosin
- 5- Bendrofluazide

#### Answer & Comments

**Answer:** 5- Bendrofluazide

The British Hypertensive Society guidelines would suggest either a Diuretic or Calcium channel blocker [C or D for older or black patient]. Although ACE inhibitor is recommended for diabetic patients, this is not among the options, hence the best choice is the diuretic (D).



#### [ Q: 1303 ] MRCPass - Cardiology

A 40 year old lady noticed transient loss of vision and presented for assessment. She has had fevers for 3 months, breathlessness and orthopnoea. Her CRP and ESR are elevated. On examination, she is clubbed. She has a loud first heart sound and a mid diastolic murmur.

*What is the diagnosis?*

- 1- Mitral stenosis
- 2- ASD
- 3- Left ventricular aneurysm
- 4- Left atrial appendage thrombus
- 5- Atrial myxoma

#### Answer & Comments

**Answer:** 5- Atrial myxoma

An atrial myxoma can present with fevers, raised inflammatory markers and breathlessness worst lying down. There may

be embolic causes of CVA or TIA. The murmur could be a diastolic 'plop' or there may be clinical signs similar to mitral stenosis.



Atrial Myxoma



#### [ Q: 1304 ] MRCPass - Cardiology

A 35 year old woman presented with a history of intermittent light-headedness. Clinical examination and 12-lead ECG were normal.

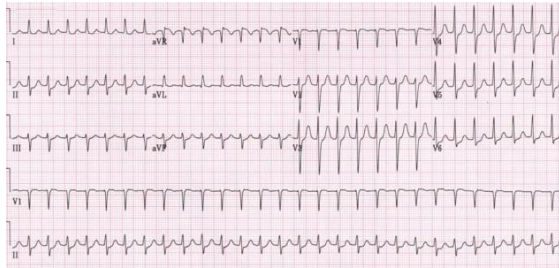
*Which of the following, if present on a 24 hour Holter ECG tracing, would be the most clinically important?*

- 1- Atrial premature beats
- 2- Profound sleep-associated bradycardia
- 3- Supraventricular tachycardia
- 4- Transient Mobitz type 1 atrioventricular block
- 5- Ventricular premature beats

#### Answer & Comments

**Answer:** 3- Supraventricular tachycardia

Mobitz type 1 is Wenkebach and does not usually cause symptoms. The most likely arrhythmia which needs treating e.g. with a beta blocker, is SVT.



SVT



## [ Q: 1305 ] MRCPass - Cardiology

A 50 year old woman with previous rheumatic heart disease has been lost to follow up for some time. She now has symptoms of breathlessness. On examination, she has a tapping apex beat, diastolic murmur and a large V wave in the JVP.

*What is the likely diagnosis?*

- 1- Isolated mitral stenosis
- 2- Mixed mitral valve disease
- 3- Mitral stenosis and tricuspid regurgitation
- 4- Cardiac tamponade
- 5- Aortic regurgitation

## Answer &amp; Comments

**Answer:** 3- Mitral stenosis and tricuspid regurgitation

Rheumatic fever has predisposed the patient towards mitral stenosis, which would manifest as signs of a low rumbling diastolic murmur and a tapping apex beat. The large V wave in the JVP suggests tricuspid regurgitation which is secondary to pulmonary hypertension (also may have a loud second heart sound and a right ventricular heave).



## [ Q: 1306 ] MRCPass - Cardiology

A 33 year old man presents with chest pains and fatigue for several days.

His observations show a temperature of 38°C, pulse 100 bpm, BP 100/70 mmHg. ECG shows T wave inversion in the anterior and inferior leads. The troponin I is 3 ng/mL (<0.04).

*Which of the following is the most likely diagnosis?*

- 1- Myocardial infarction
- 2- Pericarditis
- 3- Myocarditis
- 4- Pulmonary emboli
- 5- Pericardial effusion

## Answer &amp; Comments

**Answer:** 3- Myocarditis

Pyrexia, chest pain (pleuritic), raised troponin, T wave changes on the ECG would be suggestive of myocarditis.

Pericarditis usually causes saddle shaped ST elevation on ECG. Coxsackie B is the commonest cause. Other causes are HIV, diphtheria, Chagas disease, Lyme disease, SLE and arsenic poisoning.



## [ Q: 1307 ] MRCPass - Cardiology

A 20 year old lady is short in stature for her age. She has a webbed neck and oligomenorrhoea. On physical examination, she has a continuous murmur heard over both front of the chest as well as her back. A chest radiograph reveals a prominent left heart border and rib notching.

*Which of the following lesions best explains these findings?*

- 1- Thoracic aortic aneurysm
- 2- Single large atrioventricular valve
- 3- Supravalvular narrowing in aortic root
- 4- Coarctation of the aorta
- 5- Shortening and thickening of chordae tendineae of mitral valve

## Answer &amp; Comments

**Answer:** 4- Coarctation of the aorta

Coarctation of the aorta is the most likely diagnosis in this patient with Turner's

syndrome. Rib notching on the chest X ray is a big clue. The underlying abnormality is a deformity of the aortic media that causes eccentric narrowing of the lumen.



Rib Notching in Coarctation of the aorta (ribs 4-8 bilaterally). This occurs due to collateral vessel formation.



[ Q: 1308 ] MRCPass - Cardiology

A 40 year old man presented because he is concerned about his family history of hypertrophic obstructive cardiomyopathy. His brother has recently deceased from due to the condition.

*What investigation should be offered?*

- 1- Transthoracic echocardiogram
- 2- Transoesophageal echocardiogram
- 3- Electrophysiological study
- 4- Coronary angiogram
- 5- Cardiac thallium scan

Answer & Comments

Answer: 1- Transthoracic echocardiogram

Relatives of patients with HOCM should be offered screening especially in the context of a fatality. The best form is transthoracic

echocardiogram, and beyond that genetic testing may be helpful.



[ Q: 1309 ] MRCPass - Cardiology

A 42 year woman who has received radioactive iodine many years ago has routine blood tests. She does not have any symptoms suggestive of angina.

Her results reveal:

Free Thyroxine 10.2 pmol/l (9.8-23)

TSH 13 mU/l (0.5-4.5 mU/l)

Total cholesterol 7.8 mmol/l (<5 mmol/l)

Plasma triglycerides 2.5 mmol/l (<2 mmol/l)

*What is the appropriate treatment for the elevated lipid status?*

- 1- Diet control
- 2- Simvastatin
- 3- Thyroxine replacement
- 4- Cholestyramine
- 5- Clofibrate

Answer & Comments

Answer: 3- Thyroxine replacement

Medical conditions associated with hypothyroidism include anemia, dilutional hyponatremia, and hyperlipidemia. Subclinical hypothyroidism (as demonstrated in this case) is usually indicated by a serum TSH level between the upper limit of normal (about 5 mU/L) and 15 mU/L; occasionally the level may be higher. The serum free T4 level is, by definition, within the normal range. Treatment of choice is T4 replacement with levothyroxine sodium.



[ Q: 1310 ] MRCPass - Cardiology

A 65 year old man has symptoms of breathlessness and chest pains. He has cardiac risk factors of smoking and elevated cholesterol. On examination, he has a harsh systolic murmur and quiet second heart sound



consistent with aortic stenosis. Echocardiography reveals a gradient of 75 mmHg across the aortic valve.

*Which of the following is the most useful investigation?*

- 1- Transoesophageal echocardiography
- 2- Coronary angiography
- 3- Right heart cardiac catheter
- 4- Cardiac electrophysiological study
- 5- CT pulmonary angiogram

#### Answer & Comments

Answer: 2- Coronary angiography

The diagnosis is severe aortic stenosis with significant clinical symptoms. The patient is likely to require surgical aortic valve replacement. Along with the risk factors, there is high risk of coronary artery disease. Coronary angiography should be the next investigation to investigate whether coronary bypass grafts are necessary as well.



#### [ Q: 1311 ] MRCPass - Cardiology

A 65 year old man had a myocardial infarction 2 months ago. He has had a stent placed in the LAD artery following angioplasty. During a routine follow up Exercise Test he has a 15 beat run of nonsustained VT. The nonsustained VT occurred halfway through Stage 2.

*What is the next definitive investigation?*

- 1- Thallium scan
- 2- Cardiac electrophysiological study
- 3- Echocardiogram
- 4- 24 hour tape recording
- 5- Repeat coronary angiography

#### Answer & Comments

Answer: 2- Cardiac electrophysiological study

Post MI VT is most commonly due ventricular scar tissue. This patient has had coronary revascularisation and still has significant runs of VT. Hence an electrophysiological study to attempt to stimulate VT is necessary. If the study demonstrated VT, then the patient should have an defibrillator (ICD) inserted [MADIT trial, AmJCardiol 1997;79:167].



#### [ Q: 1312 ] MRCPass - Cardiology

A 55 year old man has palpitations and broad complex tachycardia on the ECG.

*In a broad complex tachycardia, which of the following suggests a diagnosis of supra-ventricular tachycardia (SVT)?*

- 1- Cannon a waves
- 2- Termination with adenosine
- 3- QRS duration >140msec
- 4- Fusion beats
- 5- Concordance of V leads

#### Answer & Comments

Answer: 2- Termination with adenosine

Features which favour of VT include:

evidence of AV dissociation (cannon a waves on JVP)

fusion and/or capture beats

left axis deviation (between 90 and 180 degree)

QRS duration > 140 msec

concordance of V leads (monophasic QRS)

Features which favor of SVT:

Long-short cycle sequence

Slow ing or termination by increasing vagal tone or with adenosine

Trileafed QRS in V1

RP interval < 100 msec





## [ Q: 1313 ] MRCPass - Cardiology

A 70 year old man has a history of progressive tiredness and breathlessness. On examination there is pallor, his pulse rate is 65 beats per minute, and is slow rising in nature. The JVP is not elevated.

His apex beat is at the 5th left intercostal space mid-clavicular line and it is heaving in nature. There is a systolic thrill in the right sternal edge and there is a systolic murmur in the aortic area radiating to the neck.

Investigations reveal:

Hb 8.0 g/dl

MCV 70 fL.

*Upon further investigation of this patient's anaemia the most useful test would be:*

- 1- Capsule endoscopy
- 2- Barium swallow
- 3- Colonoscopy
- 4- CT pneumocolon
- 5- Flexible sigmoidoscopy

## Answer &amp; Comments

**Answer:** 3- Colonoscopy

The patient has features of aortic stenosis and iron deficiency anaemia. Aortic stenosis may be associated with angiodysplasia of the colon and the best test to elucidate this is colonoscopy.



## [ Q: 1314 ] MRCPass - Cardiology

A 25 year man presents with episodes lightheadedness. He has no significant past medical history. Cardiac examination reveals no heart murmurs, chest X-ray and ECG are normal. A 24 hour tape is requested.

*Which arrhythmia might cause his symptoms?*

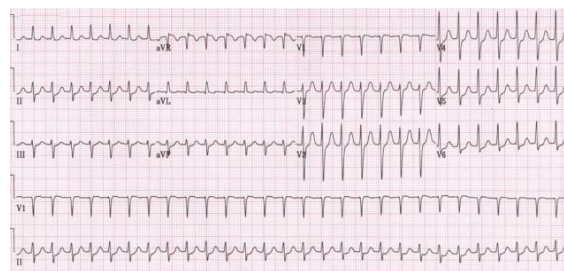
- 1- Atrial extrasystole
- 2- Supraventricular tachycardia

- 3- Wenkebach
- 4- Ventricular extrasystole
- 5- First degree heart block

## Answer &amp; Comments

**Answer:** 2- Supraventricular tachycardia

Out of the following options, the most likely rhythm which may cause symptoms are supraventricular tachycardia. The other rhythms may cause palpitations but would be unusual to cause light headedness / presyncope.



Supraventricular tachycardia



## [ Q: 1315 ] MRCPass - Cardiology

A 50 year old man presents with broad complex tachycardia. He has a BP of 100/70 and a pulse rate of 170. The duty medical registrar is considering administration of antiarrhythmics.

*Which one of the following medications is contraindicated in this patient?*

- 1- Magnesium
- 2- Amiodarone
- 3- Verapamil
- 4- Procainamide
- 5- Lignocaine

## Answer &amp; Comments

**Answer:** 3- Verapamil

The patient is likely to have ventricular tachycardia in view of the very fast rate and broad complexes. All are useful agents which

can be used in conjunction cautiously for VT except for Verapamil.

Verapamil is contraindicated in VT because it can cause the blood pressure to drop drastically due to negative inotropic action.



[ Q: 1316 ] MRCPass - Cardiology

A 65 year old man has a systolic murmur in the aortic area.

*In assessing him, which of the following is a clinical feature of severe aortic stenosis?*

- 1- Loud murmur
- 2- Slow rising pulse
- 3- Enlarged left atrium
- 4- Palpable apex beat
- 5- Early diastolic murmur

Answer & Comments

Answer: 2- Slow rising pulse

The clinical signs consistent with severe aortic stenosis are:

Slow rising pulse character

4th heart sound

Soft aortic 2nd heart sound

Systolic thrill

Extended length of murmur in systole



[ Q: 1317 ] MRCPass - Cardiology

A 60 year old man has had previous myocardial infarction. He has symptoms of breathlessness consistent with NYHA class III heart failure. Echocardiography shows an LV ejection fraction of 35%.

*Which of the following combinations of medication is most appropriate?*

- 1- ACE inhibitor,  $\beta$  blockers, angiotensin II blocker

2- ACE inhibitor,  $\beta$  blockers, aldosterone antagonist

3- ACE inhibitor, loop diuretic

4-  $\beta$  blockers, angiotensin II blocker

5- ACE inhibitor,  $\beta$  blockers, statin

Answer & Comments

Answer: 2- ACE inhibitor,  $\beta$  blockers, aldosterone antagonist

Of all the combinations, ACE inhibitor / angiotensin II blocker with  $\beta$  blockers and aldosterone antagonist (spironolactone, eplerenone) is the most appropriate given the fact that this patient has symptomatic heart failure. Trials have shown that these medications have a mortality and also symptomatic benefit.



[ Q: 1318 ] MRCPass - Cardiology

A 45 year old Caucasian man has hypertension. He has a blood pressure consistently above 160/90 mmHg. He does not have signs of malignant hypertension or renal failure.

*Which of the following is the most appropriate antihypertensive?*

- 1- Diltiazem
- 2- Methyldopa
- 3- Sodium nitroprusside
- 4- Lisinopril
- 5- Bendrofluazide

Answer & Comments

Answer: 4- Lisinopril

According to the British Hypertension Society guidelines, a patient who is non-black and under 55 years of age should be considered for an ACE inhibitor or Beta blocker. In this case the ACE-I lisinopril is the best choice.



## [ Q: 1319 ] MRCPass - Cardiology

A 32 year old lady complains of periodic episodes of palpitations and light-headedness for about 20-30 minutes. It occurred once a week for the last few weeks. An ECG showed normal sinus rhythm.

*What is the investigation of choice?*

- 1- 24 hr holter monitoring
- 2- Echo
- 3- Exercise tests
- 4- Patient controlled Loop recorder
- 5- Electrophysiological study

## Answer &amp; Comments

Answer: 4- Patient controlled Loop recorder

The frequency of the symptoms is low, hence a 24 hour tape may not capture an arrhythmia. A patient controlled loop recorder allows recording of rhythms around the time of the event, hence a much higher likelihood of recording an abnormal rhythm.



## [ Q: 1320 ] MRCPass - Cardiology

A 61 year old man with a previous history of myocardial infarction, presents with recurrent loss of consciousness. On examination there were signs of left ventricular aneurysm. BP was 110/70 mmHg and pulse rate was 90/min. CT head was normal.

*What is the cause of loss of consciousness?*

- 1- Vasovagal syncope
- 2- Pulmonary embolism
- 3- Stroke
- 4- Ventricular tachycardia
- 5- Hypersensitive carotid syndrome

## Answer &amp; Comments

Answer: 4- Ventricular tachycardia

A patient with ischaemic heart disease and ventricular aneurysm is at high risk of developing ventricular arrhythmias. This can certainly lead to the loss of consciousness.



## [ Q: 1321 ] MRCPass - Cardiology

A 50 year old man has reversed splitting of the second heart sound on examination.

*Which of the following conditions is this seen in?*

- 1- Atrial septal defect
- 2- Pulmonary regurgitation
- 3- Mild aortic stenosis
- 4- Left bundle branch block
- 5- Ventricular septal defect

## Answer &amp; Comments

Answer: 4- Left bundle branch block

Reversed splitting occurs with reversal of the normal A2 - P2 pattern. Thus A2 may be delayed as with severe aortic stenosis, and left bundle branch block (LBBB). P2 may also be early with Wolff-Parkinson-White type B and Persistent ductus arteriosus. Atrial septal defects show wide fixed splitting, and right bundle branch block (RBBB) has wide splitting.



## [ Q: 1322 ] MRCPass - Cardiology

*With regard to the conducting system of the heart, where are the Purkinje fibres situated?*

- 1- At the superior portion of the myocardium
- 2- In the middle of the myocardium
- 3- Subendocardial
- 4- Transmural
- 5- Subepicardial

## Answer &amp; Comments

Answer: 3- Subendocardial

The Purkinje fibres run in a subendocardial position. This results in depolarisation of the heart from the endocardium to the epicardium.



[ Q: 1323 ] MRCPass - Cardiology

A 40 year old lady has a pulmonary systolic murmur which is louder on inspiration. She also has a right ventricular heave. The second heart sound is wide and fixed with splitting.

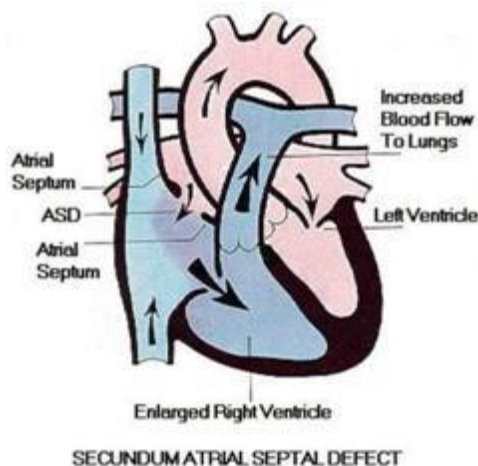
*What is the most likely diagnosis?*

- 1- Tricuspid atresia
- 2- Patent ductus arteriosus
- 3- Atrial septal defect
- 4- Aortic stenosis
- 5- Mitral stenosis

Answer & Comments

Answer: 3- Atrial septal defect

With atrial septal defect (ASD), a Primum defect causes RBBB and LAD, whilst Secundum causes RBBB and RAD on the ECG. Secundum ASD is associated with Holt-Oram syndrome (tri-phalangeal thumb and radial abnormalities). A systolic murmur is heard in the pulmonary area because of increased pulmonary valve flow due to pulmonary hypertension. Similarly, a left parasternal heave is present due to RVH.



[ Q: 1324 ] MRCPass - Cardiology

A 25 year old man presents with a collapse whilst running for the bus. He has no previous known past medical history. An ECG done on admission to the hospital fulfils the criteria for LVH. On examination, he has a jerky pulse and prominent apex beat. There is a systolic murmur heard in the aortic area.

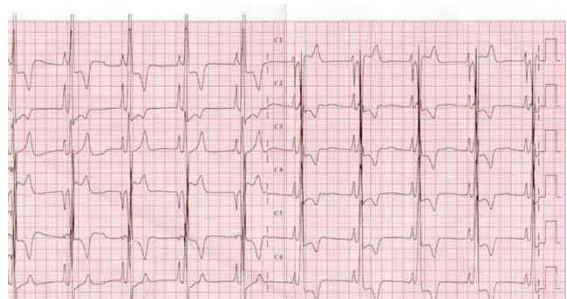
*What is the likely diagnosis?*

- 1- Dilated cardiomyopathy
- 2- Hypertrophic cardiomyopathy
- 3- Ischaemic cardiomyopathy
- 4- Restrictive cardiomyopathy
- 5- Haemochromatosis

Answer & Comments

Answer: 2- Hypertrophic cardiomyopathy

Hypertrophic cardiomyopathy which is familial, can present with presyncopal episodes as described above. Over a hundred different mutations in at least nine different genes, all encoding sarcomeric polypeptides, have been associated with hypertrophic cardiomyopathy (HCM). LVH changes with strain pattern and prominent q waves are common on the ECG. A prominent, jerky pulse is a clue.



LVH in Hypertrophic cardiomyopathy



[ Q: 1325 ] MRCPass - Cardiology

A 50 year old man who had an angioplasty asks about Clopidogrel.

*What is Clopidogrel's mode of action?*

- 1- ADP receptor antagonist
- 2- Affects APTT
- 3- Inhibits cyclooxygenase
- 4- Hydroxymethyl Coenzyme A inhibitor
- 5- Glycoprotein IIb/IIIa inhibitor

#### Answer & Comments

**Answer:** 1- ADP receptor antagonist

Clopidogrel prevents platelet aggregation through antagonism of the ADP receptor on platelets.



#### [ Q: 1326 ] MRCPass - Cardiology

A 55 year old man with breathlessness presents to A&E. On examination, he has an inspiratory systolic fall in arterial pressure of 10mmHg.

*Which one of the following is most likely to be associated?*

- 1- Myocardial infarction
- 2- Pulmonary stenosis
- 3- Cardiac tamponade
- 4- Pneumonia
- 5- Myocarditis

#### Answer & Comments

**Answer:** 3- Cardiac tamponade

Pulsus paradoxus is most commonly related to cardiac tamponade. The y descent (diastolic) phase is absent in tamponade. Pulsus paradoxus is defined as an inspiratory systolic fall in arterial pressure of 10mmHg. It not only occurs in cardiac tamponade, but also in massive PE, severe COPD and hypotension/shock.



#### [ Q: 1327 ] MRCPass - Cardiology

A 70 year old man with complete heart block has had a VVI permanent pacemaker implanted a week ago.

*What is the ECG likely to show now ?*

- 1- Prominent p waves
- 2- Delta waves
- 3- ST depression
- 4- Prolonged PR interval
- 5- LBBB

#### Answer & Comments

**Answer:** 5- LBBB

Permanent pacing can be single chamber atrial (e.g. AAI), single chamber ventricular (e.g. VVI) or dual chamber (e.g. DDD). A VVI pacemaker would mean that the pacing lead is placed in the right ventricle, causing a LBBB pattern.



#### [ Q: 1328 ] MRCPass - Cardiology

A 27 year old man presents with lethargy, poor exercise tolerance and weight loss. On examination he looks very slim and has a pulse rate of 120 beats per minute regular. The pulse volume decreases during inspiration.

His JVP is elevated 5 cms and the level increases during inspiration. On auscultation of the heart sounds an early diastolic sound is audible at the left sternal edge. On examination of the abdomen there is 4 fingerbreadths of hepatomegaly and ascites.

*What is the diagnosis?*

- 1- Mitral valve prolapse
- 2- Mitral stenosis
- 3- Constrictive pericarditis
- 4- Myocardial infarction
- 5- Aortic regurgitation

#### Answer & Comments

**Answer:** 3- Constrictive pericarditis

The patient has the clinical features of constrictive pericarditis. In constrictive



pericarditis, an early diastolic sound is heard (pericardial knock). This sound is due to turbulence caused by the arrest of rapid ventricular filling into a non-distensible pericardial sac.



[ Q: 1329 ] MRCPass - Cardiology

A 70 year old man has a nine month history of worsening breathlessness. His blood pressure is 120/90 mmHg, O<sub>2</sub> sats 89% on air, temperature is 36.5°C, there is a systolic murmur heard throughout the precordium.

Blood tests show

Hb 14 g/dl

WCC  $5 \times 10^9/L$

Platelets  $280 \times 10^9/L$

urea 7  $\mu\text{mol/l}$

creatinine 75  $\mu\text{mol/l}$

sodium 142 mmol/l

potassium 4.2 mmol/l

cholesterol 6.2 mmol/l

triglyceride 2.1 mmol/l

*Which of the following is most likely?*

- 1- Dilated cardiomyopathy
- 2- Aortic regurgitation
- 3- Aortic stenosis
- 4- Pericardial effusion
- 5- Coarctation of the aorta

Answer & Comments

Answer: 3- Aortic stenosis

There is evidence of left sided heart failure clinically. The murmur throughout the praecordium and narrow pulse pressure suggest aortic stenosis. The patient is also predisposed to this by a high cholesterol.



[ Q: 1330 ] MRCPass - Cardiology

A 50 year old man had a ventricular

fibrillation cardiac arrest whilst at a railway station. He was successfully resuscitated by a passerby. Coronary angiography showed no stenotic lesions in the coronary arteries.

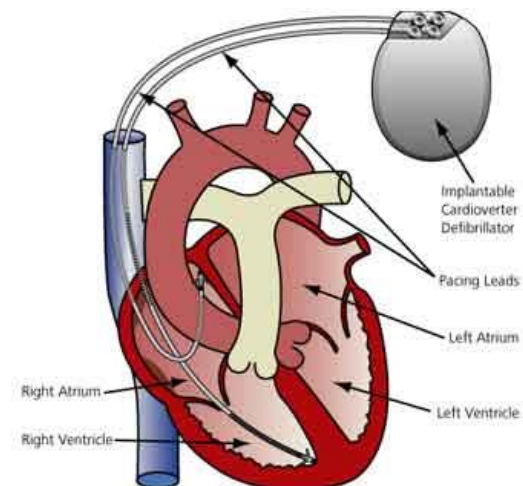
*Which is the next management step?*

- 1- Lifelong amiodarone
- 2- Implantable cardiac defibrillator
- 3- Procainamide
- 4- Permanent pacemaker
- 5- No further action necessary

Answer & Comments

Answer: 2- Implantable cardiac defibrillator

A cardiac electrophysiological study would be necessary to help confirm whether this patient has inducible ventricular tachycardia, and ablation of the pathways if so. However in a young patient with no coronary artery disease demonstrable to revascularise, ICD is necessary to treat a possible further cardiac arrest.



[ Q: 1331 ] MRCPass - Cardiology

A 25 year old biology student presents with palpitations and has the ECG (above) recorded. Adenosine is given at 6mg and 12mg intravenously. He felt nauseous for a few seconds and there is a rhythm change to sinus rhythm.

*How does adenosine work?*



- 1- Decrease sensitivity of conduction bundle to electrolytes
- 2- Altering Purkinje fiber response
- 3- Blocking an accessory pathway
- 4- Blocking AV node conduction
- 5- QT prolongation

#### Answer & Comments

**Answer:** 4- Blocking AV node conduction

Adenosine works by slowing atrioventricular (AV) conduction, hence breaking the re-entry circuit which can be a AVNRT or AVRT in supra ventricular tachycardia.



#### [ Q: 1332 ] MRCPass - Cardiology

A 10 year old patient has Down's syndrome. He has over the past year become progressively more breathless, is losing weight and feeling lethargic. He is also becoming blue when running with the dog during walks.

*Which of the following cardiac lesions might be responsible?*

- 1- Atrial septal defect
- 2- Aortic regurgitation
- 3- Tetralogy of fallot's
- 4- Mitral stenosis
- 5- Ventricular septal defect

#### Answer & Comments

**Answer:** 5- Ventricular septal defect

An endocardial cushion defect (between the atrial and ventricular septum) can lead to ASD or VSD. With rapid deterioration a VSD is most likely to cause breathlessness and cyanosis.



#### [ Q: 1333 ] MRCPass - Cardiology

A 60 year old man presents with central crushing chest pain radiating to the back. He has a weak pulse in the right arm

and systolic BP is 120 mmHg in the left arm, 80 mmHg systolic in the right arm.

*Which one of the following is a feature of severity requiring immediate (surgical) action?*

- 1- Persistent vomiting
- 2- Headache
- 3- Pulmonary oedema on the CXR
- 4- Hypertension
- 5- Loud diastolic murmur in the aortic area

#### Answer & Comments

**Answer:** 5- Loud diastolic murmur in the aortic area

In aortic dissection, hypertension should be treated with an infusion such as labetalol. A loud diastolic murmur in the aortic area suggests aortic regurgitation. Aortic regurgitation and pericardial effusion (haemopericardium) suggest dissection down to the aortic root. These features, or persisting chest pain suggest that the patient requires prompt surgery.



#### [ Q: 1334 ] MRCPass - Cardiology

A 66 year old man presents with tearing chest pain radiating to the back. The pain started 5 hours ago and is continuous. He has a past medical history of previous stroke, hypertension and osteoarthritis. His blood pressure is 180/95 mmHg. There is an early diastolic murmur in the aortic area and the chest X ray showed a widened mediastinum. An urgent CT of his chest with contrast shows a dissection flap.

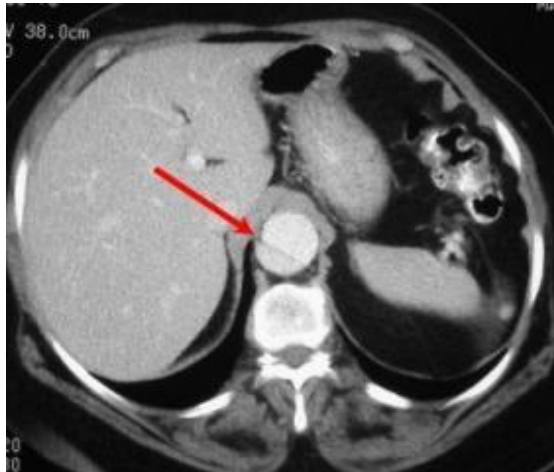
*What is the best treatment at present?*

- 1- Iv amlodipine
- 2- Iv labetalol
- 3- Iv tirofiban
- 4- Oral sodium nitroprusside
- 5- Clopidogrel

## Answer &amp; Comments

**Answer:** 2- Iv labetalol

The history and CT scan findings confirm aortic dissection in this case. Blood pressure control is vital in the early management of aortic dissection, prior to considering cardiac surgery. The best initial treatments are iv labetalol or iv sodium nitroprusside.



Aortic dissection - arrow points to the flap



## [ Q: 1335 ] MRCPass - Cardiology

A 70 year old woman has a history of palpitations for 4 months. An ECG at that time showed atrial fibrillation. She was given digoxin, diuretics and aspirin. She now presents with two short-lived episodes of altered sensation in the left face, left arm and leg. She also had intermittent dysphasia. There is poor coordination of the left hand.

An echocardiogram was normal as was a CT head scan.

*What is the most appropriate next step in management?*

- 1- Carotid endarterectomy
- 2- Anticoagulation with warfarin
- 3- Clopidogrel
- 4- Corticosteroid treatment
- 5- No action

## Answer &amp; Comments

**Answer:** 2- Anticoagulation with warfarin

The patient has thrombotic events related to atrial fibrillation, hence formal anticoagulation is recommended.

The Age and stroke gives her a CHADS-65 score of 3. A CHADS-65 score of 2 or above suggests the need for warfarinisation.



## [ Q: 1336 ] MRCPass - Cardiology

A 13 year boy had a syncopal episode followed by generalised jerking of all his limbs, whilst having dental filling.

He was particularly nervous about the procedure. When he was assessed in casualty, his BP was 145/80, O<sub>2</sub> sats were 99% and ECG showed normal sinus rhythm.

*What is the likely diagnosis?*

- 1- Generalised tonic clonic seizures
- 2- Vasovagal syncope
- 3- Carotid sinus hypersensitivity
- 4- VF arrest
- 5- Meningitis

## Answer &amp; Comments

**Answer:** 2- Vasovagal syncope

Vasovagal syncope is not uncommon during a procedure which a patient is frightened of. There may be transient brain hypoxia which may caused generalised seizure like activity.



## [ Q: 1337 ] MRCPass - Cardiology

A 60 year male diabetic presents to the clinic. He takes metformin 850 mg tds, bendrofluazide 2.5 mg and aspirin 75 mg daily. He has had a previous myocardial infarction but is currentl asymptomatic. His body mass index was 33.5 kg/m<sup>2</sup>, he has a pulse of 90 beats per minute and a blood pressure of

160/9 mmHg. His cholesterol concentration is 3.8 mmol/l (< 5.5).

*What is the most appropriate therapy for this patient?*

- 1- Ramipril
- 2- Clopidogrel
- 3- Nicorandil
- 4- Orlistat
- 5- Simvastatin

#### Answer & Comments

Answer: 1- Ramipril

This patient has vascular disease and several vascular risk factors. An ACE inhibitor would reduce cardiovascular risk as suggested by the HOPE study.



#### [ Q: 1338 ] MRCPass - Cardiology

A 21 year-old woman has a history of palpitations and light headedness. ECG shows short PR interval and inferior Q waves. Her symptoms improve with atenolol 25 mg/day but she has had two short episodes of similar symptoms in the previous 24 hours.

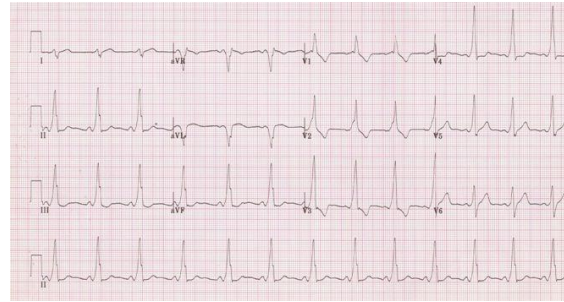
*What is the long-term management of choice?*

- 1- Anticoagulation
- 2- Oral amiodarone
- 3- Oral digoxin
- 4- Increase the dose of atenolol
- 5- Radiofrequency ablation

#### Answer & Comments

Answer: 5- Radiofrequency ablation

The diagnosis is Wolff-Parkinson-White syndrome and the patient has atrial tachycardias which are not controlled by medical therapy. She should be referred to a cardiac physiologist for radiofrequency ablation of the accessory pathway.



ECG in WPW showing short PR interval and rapid upstroke in WPW



#### [ Q: 1339 ] MRCPass - Cardiology

A 55 year old man presented with chest pain, facial flushing and elevated jugular venous pressure but no leg oedema. He had been exposed to tuberculosis in childhood, had a strongly positive tuberculin test and had been followed up in the tuberculosis surveillance program with regular chest x-rays, but had never been diagnosed with tuberculosis. Chest x-ray on presentation showed calcified plaques and masses in the pericardium and mediastinum.

Coronary angiography showed 70% stenosis in the left anterior descending artery. Cardiac catheterization showed equalisation of diastolic pressures in all four chambers, with a positive square root sign.

*What is the likely diagnosis?*

- 1- Pericardial effusion
- 2- Cardiac tamponade
- 3- Constrictive pericarditis
- 4- Sarcoidosis
- 5- Angina

#### Answer & Comments

Answer: 3- Constrictive pericarditis

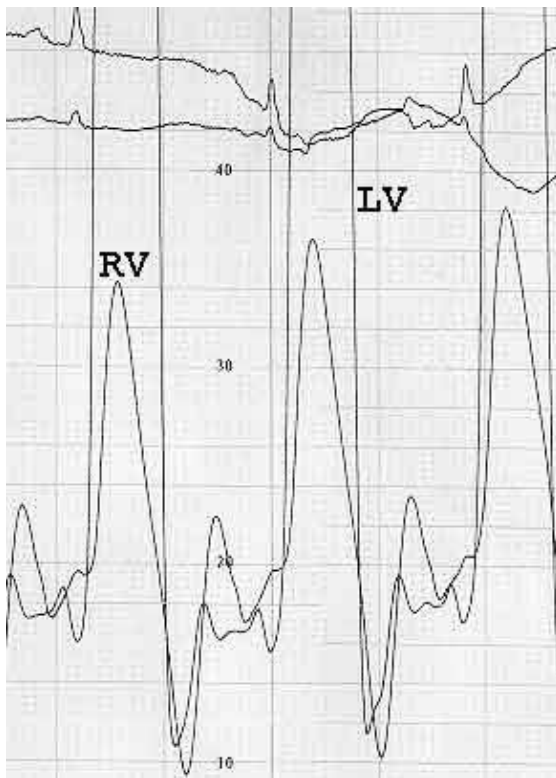
The cardiac catheter data shows a pattern of ventricular diastolic pressure characteristic of constrictive pericarditis. Tuberculous pericarditis is seen in 1%-2% of all cases of pulmonary tuberculosis and can lead to

constriction. Treatment is with corticosteroids and anti TB therapy.

The atrial waveform manifests:

- augmented "a" wave, reflecting enhanced atrial contraction into a stiff ventricle
- a rapid "x" descent attributable to subsequent accelerated atrial relaxation
- a steep "y" descent reflecting rapid, resistance-free early diastolic filling.

Right and left heart chamber filling pressures are typically increased and equalized (LVEDP = RVEDP), reflecting the common constraining effects of the pericardium.



Traces showing equalisation of diastolic pressures in constrictive pericarditis



[ Q: 1340 ] MRCPass - Cardiology

An 30 year old man presents with a history of syncope related to exercise. There is a family history of sudden cardiac death. On examination, the carotid pulse is jerky, there is a double apical pulsation. On auscultation there is a fourth heart sound, an ejection

systolic murmur heard at the base of the heart.

*The inheritance of this condition is most likely:*

- 1- Mitochondrial inheritance
- 2- X-linked dominant
- 3- X-linked recessive
- 4- Autosomal recessive
- 5- Autosomal dominant

#### Answer & Comments

Answer: 5- Autosomal dominant

Hypertrophic obstructive cardiomyopathy is most commonly of Autosomal dominant inheritance. It occurs in at least on in 1,000 to one in 500 of the general population.



[ Q: 1341 ] MRCPass - Cardiology

A 30 year old man is seen annually in the cardiac clinic. During auscultation of his heart there is wide fixed splitting of the second heart sound.

*In which of following conditions does this occur?*

- 1- Atrial septal defect
- 2- Aortic regurgitation
- 3- Constrictive pericarditis
- 4- Ebstein's anomaly
- 5- Right Bundle Branch Block

#### Answer & Comments

Answer: 1- Atrial septal defect

Wide fixed splitting is seen in ASD. In RBBB there is wide splitting of S2 but it not fixed.



[ Q: 1342 ] MRCPass - Cardiology

A 65 year old lady has recently had a cholecystectomy 2 days ago. She is now very breathless, has central pleuritic chest pain and feels dizzy. She is only able to say a few words

and looks pale. Examination reveals a sinus tachycardia and flow murmur across the aortic area. Her blood pressure is 85 / 50 mmHg, O<sub>2</sub> saturations are 85% on 6 litres of O<sub>2</sub>. ECG shows non specific T wave abnormalities.

*What should be the next management step?*

- 1- CT pulmonary angiogram
- 2- Intravenous heparin
- 3- Coronary angiogram
- 4- Thrombolysis with tenecteplase
- 5- Transthoracic echocardiography

#### Answer & Comments

Answer: 4- Thrombolysis with tenecteplase

This patient has recently had surgery, and her presentation would be consistent with life threatening massive pulmonary embolus. She is medically too unstable to wait for a diagnostic test in radiology, thus thrombolysis should be done immediately. If this does not work then the patient may need ventilation, CT to confirm the diagnosis and surgical embolectomy.



[ Q: 1343 ] MRCPass - Cardiology

A 75 year old man is admitted with sudden onset shortness of breath, poor exercise tolerance and ankle oedema.

*Which of the following laboratory test would identify the reason for his presentation?*

- 1- Alpha 1 antitrypsin levels
- 2- Serum electrophoresis
- 3- Serum triglycerides
- 4- Brain natriuretic peptide
- 5- Urea and electrolytes

#### Answer & Comments

Answer: 4- Brain natriuretic peptide

The clinical scenario fits with acute pulmonary oedema. Brain or B type natriuretic peptide is

increasingly used as a marker of congestive heart failure. It has high specificity for the condition. It is released by ventricular cardiomyocytes due to stretch as part of the pathophysiology of cardiac failure.



[ Q: 1344 ] MRCPass - Cardiology

A 55 year old man complains of dyspnoea on exertion. He recently returned from Africa on a long holiday. He has distant heart sounds on auscultation of the chest. A chest radiograph reveals a thin rim of calcification surrounding the cardiac outline.

*Which of the following is likely?*

- 1- Myocarditis
- 2- Silent myocardial infarction
- 3- Subacute bacterial endocarditis
- 4- Small pneumothorax
- 5- Constrictive pericarditis

#### Answer & Comments

Answer: 5- Constrictive pericarditis

The likely diagnosis is constrictive pericarditis. The is probably related to previous tuberculous infection because of the calcification. Acute pericarditis is less likely to cause calcification.



Rim of calcification seen on the CXR





## [ Q: 1345 ] MRCPass - Cardiology

A 45 year old lady has previous history of rheumatic fever. She has a loud first heart sound and a diastolic murmur suggestive of mitral stenosis.

*Which of these is the best indicator of severe mitral stenosis?*

- 1- Increased pulse pressure
- 2- Clubbing
- 3- Loud second heart sound and right parasternal heave
- 4- Tapping apex beat
- 5- Rumbling mid diastolic murmur

## Answer &amp; Comments

Answer: 3- Loud second heart sound and right parasternal heave

A loud P2 and features of right heart strain is suggestive of pulmonary hypertension, hence severe mitral stenosis.



## [ Q: 1346 ] MRCPass - Cardiology

A 80 year old woman is referred by her GP for high blood pressure. Over the last three months her pressure has been recorded at around 175/80 mmHg for 3 occasions. She has a body mass index of 26 kg/m<sup>2</sup> and is a nonsmoker.

*Which of the following is the most appropriate treatment for her blood pressure?*

- 1- Calcium channel blocker
- 2- Beta blocker
- 3- Alpha Blocker
- 4- Angiotensin Receptor Blocker
- 5- Angiotensin Converting Enzyme (ACE) Inhibitor

## Answer &amp; Comments

Answer: 1- Calcium channel blocker

This patient isolated systolic hypertension (systolic BP >160 mmHg). Based upon studies such as the Systolic Hypertension in the Elderly Program (SHEP) the BHS guidelines suggest treatment with either Calcium antagonists or Diuretics (C or D).



## [ Q: 1347 ] MRCPass - Cardiology

A 65 year old man experiences substernal chest pain upon exertion for 6 months. An electrocardiogram shows T wave inversion in the anterolateral leads at rest. He has a total serum cholesterol of 8 mmol/l. On angiography, he has a 95% narrowing of the left anterior descending artery.

*Which of following events is likely occur in this patient?*

- 1- Pulmonary embolism from a left ventricular mural thrombus
- 2- Pulmonary embolism from thrombosis in a internal jugular vein
- 3- A systemic artery embolus from thrombosis in a the hepatic vein
- 4- A systemic artery embolus from a left ventricular mural thrombus
- 5- A systemic artery embolus from a left atrial appendage thrombus

## Answer &amp; Comments

Answer: 4- A systemic artery embolus from a left ventricular mural thrombus

A significant stenosis of the left anterior descending artery may lead to infarction of anterior region of the left ventricle. Thrombus may form on an area of the dyskinetic ventricle (mural thrombus). Therefore he at risk of arterial embolus of thrombus from the LV.



## [ Q: 1348 ] MRCPass - Cardiology

A 60 year old man presents with sharp chest pain radiating to the epigastrium.



He has ST elevation in the anterior leads on his ECG and is thrombolysed. The chest pain persists despite thrombolysis. He develops a raised JVP up to the ear lobes and BP drops to 95/60. There are signs of pulsus paradoxus.

*What is the likely diagnosis?*

- 1- Aortic dissection
- 2- Pericarditis
- 3- Pulmonary embolism
- 4- Anterior MI with myocardial rupture
- 5- Patent ductus arteriosus

#### Answer & Comments

Answer: 1- Aortic dissection

Aortic dissection can present with pain radiating to the epigastric region or back. If the dissection flap involves close to the aortic root, then the coronary flow can be affected, causing either inferior MI in right coronary artery or anterior MI in left anterior descending artery involvement. Cardiac tamponade can also be caused by dissection (blood flow ing into pericardial space) and leading to a raised JVP and pulsus paradoxus.



[ Q: 1349 ] MRCPass - Cardiology

A 60 year old man was admitted with severe chest pain. On examination his Blood Pressure was 205/115mm Hg.

ECG showed >2mm ST elevation in Leads V2-4. He was given morphine and aspirin.

*What is the next appropriate management?*

- 1- Iv tPA
- 2- Iv streptokinase
- 3- Iv GTN
- 4- Clopidogrel
- 5- Tirofiban

#### Answer & Comments

Answer: 3- Iv GTN

In this patient the blood pressure is too high to safely administer thrombolysis. GTN should be given to lower the blood pressure in the first instance and to vasodilate the coronary arteries.



[ Q: 1350 ] MRCPass - Cardiology

A 72 year old man is reviewed at medical outpatient clinic complaining of tiredness. He takes amiodarone, aspirin, atenolol and atorvastatin. His heart rate on examination is 85 bpm. Recent 24-hr ECG shows sinus rhythm throughout with occasional ventricular ectopics.

Investigations reveal:

Free T<sub>4</sub> 32 nmol/l (9-22)

TSH < 0.02 mU/l (0.4-4)

*What is the best management strategy for this patient?*

- 1- Stop amiodarone only
- 2- Stop amiodarone and start carbimazole
- 3- Stop amiodarone and start prednisolone
- 4- Check antithyroid antibodies
- 5- Prednisolone only

#### Answer & Comments

Answer: 2- Stop amiodarone and start carbimazole

This patient has probable amiodarone-induced hyperthyroidism.

The amiodarone was used to maintain sinus rhythm in this patient who was admitted with ischaemic heart disease and atrial fibrillation/flutter that spontaneously settled. The amiodarone should be discontinued, and carbimazole started. When the patient is euthyroid, the dose of carbimazole may be reduced (amiodarone can stay in the system for several weeks).



[ Q: 1351 ] MRCPass - Cardiology

A 60 year old man who was previously asymptomatic suddenly develops severe anterior chest pain radiating to the back. Within minutes, he becomes unconscious. He has a history of hypertension.

On examination, he has a blood pressure of 120 / 60 mmHg in the right arm and 105 / 55 mmHg in the left arm. An early diastolic murmur was audible in the lower left sternal edge.

*Which of the following is the most likely diagnosis?*

- 1- Malignant hypertension
- 2- Internal carotid artery dissection
- 3- Acute myocardial infarction
- 4- Aortic dissection
- 5- Pulmonary embolus

#### Answer & Comments

**Answer:** 4- Aortic dissection

The acute history of sharp pain radiating to the back is suggestive of aortic dissection. In addition, there is predisposing risk factor of hypertension and he collapses (suggesting that the dissection flap may have involved large vessels leading to aortic vascular insufficiency) and hence the neurological symptoms.

When the flap dissects down to the aortic root, aortic regurgitation may also be found (early diastolic murmur).



[ Q: 1352 ] MRCPass - Cardiology

A 62 year old man has atrial fibrillation and was found to be in pulmonary oedema clinically. He improves clinically in 3 days, but then begins to feel nauseous. His creatinine has risen from 120 to 210 µmol/l. He has ST changes on his ECG and complains of altered vision.

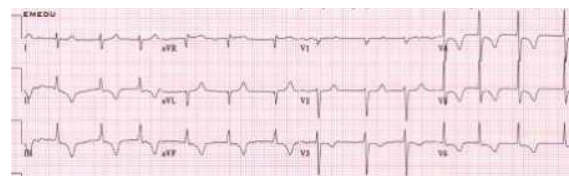
*Which of these drugs is the most likely cause of the effects?*

- 1- Ramipril
- 2- Frusemide
- 3- Digoxin
- 4- Diltiazem
- 5- Spironolactone

#### Answer & Comments

**Answer:** 3- Digoxin

Digoxin toxicity can occur especially with renal impairment. It typically causes nausea & vomiting. ST depression occurs along with bradycardia on the ECG. The patient may also get xanthopsia (yellow vision).



Digoxin Effect



[ Q: 1353 ] MRCPass - Cardiology

A 60 year old man has had a myocardial infarction. His pulse rate is 45 and he is feeling lightheaded. Blood pressure is 90/65.

*In which one of the following conditions is temporary pacing indicated when symptoms are present?*

- 1- First degree heart block
- 2- Wenkebach
- 3- 2:1 Mobitz type II heart block
- 4- Left bundle branch block
- 5- Bifascicular block

#### Answer & Comments

**Answer:** 3- 2:1 Mobitz type II heart block

The first form of second degree heart block, Mobitz type I (Wenkebach) is due to progressive prolongation of PR interval and then missing a beat. Mobitz type II second

degree heart block can occur with 2:1 (only 1 QRS is conducted for 2 p waves) or 3:1. In a patient who is compromised with symptoms and hypotension, temporary pacing is indicated.



[ Q: 1354 ] MRCPass - Cardiology

A 60 year old woman has atrial fibrillation controlled with digoxin and beta blocker. She has a previous history of hypothyroidism but her last thyroid function tests were normal. She feels lightheaded and is brought to hospital.

Her renal function is abnormal and she has a pulse rate of 35.

*What is the likely diagnosis?*

- 1- Myxedema crisis
- 2- Addisonian crisis
- 3- Hypercalcaemia
- 4- Sick sinus syndrome
- 5- Digoxin toxicity

Answer & Comments

Answer: 5- Digoxin toxicity

Factors which predispose to digoxin toxicity are renal impairment, hypokalaemia, hypomagnesaemia and hypercalcaemia. It can lead to bradyarrhythmias - first degree heart block and Wenkebach (Mobitz type II second degree heart block is rare), and complete heart block. Other features of digoxin toxicity are xanthopsia (yellow vision), nausea & vomiting and dyspnoea. The reversed tick sign on the ECG is not a feature of toxicity but is associated with digoxin use.



[ Q: 1355 ] MRCPass - Cardiology

A 75 year old man with dilated cardiomyopathy remains symptomatic in NYHA class 2 group. He has chronic heart failure. On examination his BP 150/95. He is

currently taking Ramipril 10 mg od and Frusemide 80 mg OD.

*What is the best treatment option?*

- 1- Losartan
- 2- Amiodarone
- 3- Bisoprolol
- 4- Digoxin
- 5- Spironolactone

Answer & Comments

Answer: 3- Bisoprolol

Beta blockers improve mortality quality of life in chronic heart failure (COPERNICUS, MERIT, CIBIS trials). They should be initiated once patients are stable (rather than in the acute setting) and can be used in all classes of heart failure.



[ Q: 1356 ] MRCPass - Cardiology

A 50 year old lady has palpitations. Her ECG shows a broad complex tachycardia.

*Which of these features suggests that the tachycardia is more likely to be of ventricular origin?*

- 1- QRS of 180 ms
- 2- Left bundle branch block and left axis deviation
- 3- P wave for every QRS complex
- 4- History of atrial fibrillation
- 5- Heart rate of 150

Answer & Comments

Answer: 1- QRS of 180 ms

Features that favour VT :

- QRS of > 140ms
- dissociated p waves
- history of ischaemic heart disease

right bundle branch block with left axis deviation

HR > 170 beats per minute



[ Q: 1357 ] MRCPass - Cardiology

A 50 year old woman has new symptoms of palpitations. She has no previous cardiac history. An ECG reveals atrial fibrillation.

*Which one of the following drugs is most likely to restore sinus rhythm?*

- 1- Diltiazem
- 2- Digoxin
- 3- Atenolol
- 4- Flecainide
- 5- Labetalol

Answer & Comments

Answer: 4- Flecainide

Flecainide is a class Ic antiarrhythmic drug. It helps restoration of sinus rhythm and prevent recurrence of AF. Flecaïnide may prolong QT interval. The drug was used in the Cardiac Arrhythmia Suppression Trial (CAST) trial, and was associated with increased mortality in patients with ischaemic heart disease.



[ Q: 1358 ] MRCPass - Cardiology

A 53 year old man presents with severe crushing chest pains. His ECG showed dominant R waves in V1 and V2 leads. The T waves were also tall.

*What is the most likely cause?*

- 1- Lateral MI
- 2- Anterior MI
- 3- Inferior MI
- 4- Posterior MI
- 5- Pulmonary embolism

Answer & Comments

Answer: 4- Posterior MI

The changes of posterior myocardial infarction are seen indirectly in the anterior precordial leads. Leads V1 to V3 face the endocardial surface of the posterior wall of the left ventricle. As these leads record from the opposite side of the heart instead of directly over the infarct, the changes of posterior infarction are reversed in these leads. The R waves increase in size, becoming broader and dominant, and are associated with ST depression and upright T waves.



[ Q: 1359 ] MRCPass - Cardiology

A 29 year old lady complained of transient blurred vision following a long flight. She has no other past medical history and is on no regular medications. On examination, there were no audible heart murmurs. CT scan of her head revealed no abnormality.

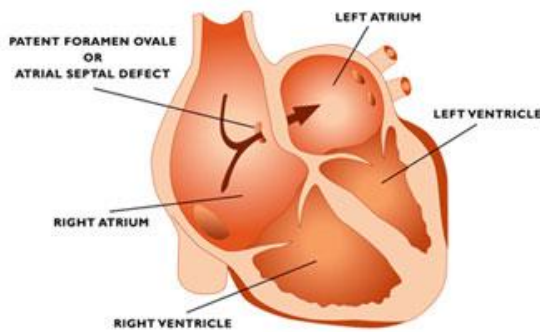
*What is the most likely underlying cause of her presentation?*

- 1- Antithrombin III deficiency
- 2- Atrial septal defect
- 3- Brain tumour
- 4- Patent foramen ovale
- 5- Vestibulitis

Answer & Comments

Answer: 4- Patent foramen ovale

The clinical scenario is one in which a thrombus has developed probably in the leg, and embolised via a patent foramen ovale, causing a transient ischaemic attack.



Patent Foramen Ovale



## [ Q: 1360 ] MRCPass - Cardiology

A 60 year old man is acutely short of breath. ECG shows atrial fibrillation. His HR is 170 and BP is 110/70. There are no cardiac murmurs but he has a raised JVP and few basal crackles in the lungs.

*Which of these is the best management strategy?*

- 1- Atenolol, frusemide, low molecular weight heparin
- 2- Digoxin and low molecular weight heparin
- 3- Iv amiodarone, iv frusemide
- 4- Digoxin, frusemide, low molecular weight heparin
- 5- Frusemide and DC cardioversion

## Answer &amp; Comments

**Answer:** 4- Digoxin, frusemide, low molecular weight heparin

The patient has evidence of pulmonary oedema related to tachycardia and AF. She needs anticoagulation, rate control and diuresis to relieve pulmonary oedema. In addition, if her blood pressure allows, a nitrate (GTN) infusion would be helpful. DC cardioversion should be considered if rate control is poor but is associated with high risk of thromboembolism if the AF is not new.



## [ Q: 1361 ] MRCPass - Cardiology

A 23 year old lady has a 6 month history of fever and pains in her elbows, wrist and knee joints. There is a soft systolic murmur and a pericardial rub on auscultation.

Her bloods reveal:

Hb 12.0 g/dl, WCC  $10 \times 10^9/L$ , platelets  $280 \times 10^9/L$ , urea  $5 \mu\text{mol/l}$ , creatinine  $70 \mu\text{mol/l}$ , sodium  $138 \text{ mmol/l}$ , potassium  $3.8 \text{ mmol/l}$ , bilirubin  $18 \mu\text{mol/l}$ , AST  $18 \text{ U/l}$ , ALP  $180 \text{ U/l}$ , albumin  $35 \text{ g/l}$ , ESR  $100 \text{ mm/hr}$ , CRP  $140 \text{ mg/l}$ .

*Which of the following is the likely diagnosis?*

- 1- Viral pericarditis
- 2- Rheumatic fever
- 3- Subacute bacterial endocarditis
- 4- Atrial myxoma
- 5- Polyarteritis nodosa

## Answer &amp; Comments

**Answer:** 2- Rheumatic fever

This patient has polyarthritis, carditis (2 major criteria), fever and raised inflammatory markers (2 minor criteria). The history is consistent with rheumatic fever ( $\beta$  haemolytic strep Group A) infection.

### Rheumatic Fever/ Rheumatic Heart Disease

**Major criteria:** Carditis,  
polyarthritis, chorea,  
subcutaneous nodules,  
and erythema marginatum



## [ Q: 1362 ] MRCPass - Cardiology

A 55 year old Afro-Caribbean man in the outpatient clinic has uncomplicated essential hypertension. His blood pressure

today is 160/100 mmHg despite optimization of non-pharmacological therapy.

*Which one of the following drugs should be used?*

- 1- Atenolol 50mg od
- 2- Amlodipine 5mg od
- 3- Enalapril 5mg bd
- 4- Nifedipine 10mg tds
- 5- Lisinopril 2.5mg od

#### Answer & Comments

**Answer:** 2- Amlodipine 5mg od

Studies indicate that drugs such as ACE (angiotensin-converting enzyme) inhibitors and Beta-receptor antagonists are less effective in Afro-Caribbeans. The reason appears to be related to the finding that the renin-angiotensin-aldosterone (RAA) system is commonly suppressed in the majority of Afro-Caribbeans. As such, drugs that suppress the RAA system are less likely to be effective.

Calcium-channel blockers (CCBs) and diuretics appear to be more effective in this subgroup. Short-acting CCBs do not provide prolonged BP control, can cause reflex tachycardia and may be associated with higher mortality.

Therefore, long-acting CCB should be the first-line drug of choice. Ideally, a once-daily agent with that provides a smooth 24-hour BP control (e.g. Nifedipine LA 30mg od or Amlodipine 5 mg od).



[ Q: 1363 ] MRCPass - Cardiology

A 65 year old patient diagnosed as having myocardial infarction on admission to hospital. 4 days later he suffered an attack of prolonged chest pain while still in the hospital.

*Which of the enzymes would best help in diagnosing a possible second MI?*

- 1- Troponin I
- 2- Troponin T

- 3- LDH
- 4- CK-MB
- 5- CK

#### Answer & Comments

**Answer:** 4- CK-MB

Troponins tend to be elevated for up to 14 days. CK-MB comes down to normal level within 48-72 hours, and is the most specific of the CK enzymes. Within 4 days of the first MI, the CK-MB fraction should not be raised, and if so, indicates a possible second MI.



[ Q: 1364 ] MRCPass - Cardiology

A 65 year old patient has had a previous myocardial infarction 5 years ago followed by coronary artery bypass grafting. She is on aspirin, ramipril and furosemide. During review, she is well. Blood pressure is 140/70 mmHg, pulse is 80 and regular, JVP is not raised. Her breath sounds are clear.

*Which drug should be considered ?*

- 1- Digoxin
- 2- Lisinopril
- 3- Carvedilol
- 4- Clopidogrel
- 5- Tirofiban

#### Answer & Comments

**Answer:** 3- Carvedilol

The Carvedilol Prospective Randomized Cumulative Survival Study in patient with severe chronic heart failure was stopped early because of a significant beneficial effect of carvedilol on survival.



[ Q: 1365 ] MRCPass - Cardiology

A 70 year old man presents with an



episode of collapse. He has had 3 similar episodes recently. 2 years ago he suffered an anterior myocardial infarction.

On examination he was orientated and symptom-free with a regular pulse rate of 100 bpm, BP 140/80 mmHg and the apex beat was displaced to the left. There was an apical systolic murmur. There were no focal neurological signs.

ECG showed sinus rhythm, Q waves and ST segment elevation anteriorly without reciprocal depression. CXR suggests left ventricular aneurysm.

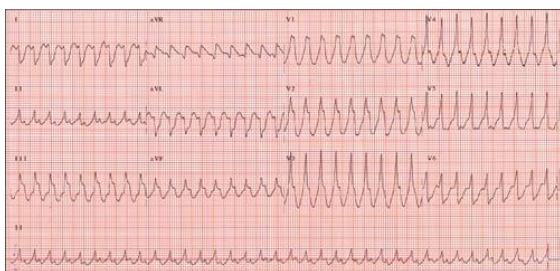
*What is the likely cause of the collapses?*

- 1- Acute anterior myocardial infarction
- 2- Cerebrovascular accident
- 3- Epileptic seizure
- 4- Left ventricular aneurysm
- 5- Ventricular tachycardia

#### Answer & Comments

Answer: 5- Ventricular tachycardia

A patient with anterior MI, likely ventricular scarring with a collapse is likely to have ventricular arrhythmias. The fact that there are no focal neurological signs makes thromboembolism or stroke unlikely.



Ventricular Tachycardia



[ Q: 1366 ] MRCPass - Cardiology

A 25 year old man is brought into hospital with symptoms of alcohol intoxication. An initial ECG reveals atrial fibrillation. The next morning he was found to

have spontaneously reverted to sinus rhythm. An echocardiogram is normal.

*What is the appropriate management?*

- 1- Advice to stop drinking
- 2- Amiodarone
- 3- Sotalol
- 4- Aspirin 3 months
- 5- Warfarin for one month

#### Answer & Comments

Answer: 1- Advice to stop drinking

Excessive Alcohol is a well recognized cause of atrial fibrillation, likely to be the cause in this case. Ischaemic heart disease is unlikely, as is structural heart disease in view of a normal echocardiogram. Therefore, advice to stop drinking is most likely to help maintain sinus rhythm.



[ Q: 1367 ] MRCPass - Cardiology

A 60 year old security guard presents with sudden onset of severe crushing central chest pain. The E.C.G shows sinus bradycardia with ST segment elevation in leads II, III, aVF.

*Where is the likely lesion?*

- 1- Diagonal artery
- 2- Left anterior descending
- 3- Right coronary artery
- 4- Circumflex artery
- 5- Obtuse marginal artery

#### Answer & Comments

Answer: 3- Right coronary artery

The patient has an inferior myocardial infarction. This area of the myocardium is supplied by the right coronary artery. The sino atrial node is also supplied by an artery which arises from the right coronary artery and hence there may be bradycardia or heart block.



## [ Q: 1368 ] MRCPass - Cardiology

A 65 year old man has presented with chest pain and has anterior ST elevation on the ECG which is thrombolysed with tenecteplase. He becomes very breathless. On examination, he has a loud pansystolic murmur in the lower left sternal edge and bilateral coarse crepitations in the lung bases.

*Which of the following investigations is most important to confirm the diagnosis?*

- 1- Chest X ray
- 2- Transthoracic echocardiogram
- 3- CT pulmonary angiogram
- 4- Repeat ECG
- 5- Arterial blood gas

## Answer &amp; Comments

Answer: 2- Transthoracic echocardiogram

Although he is likely to have pulmonary oedema, a CXR will not confirm the diagnosis. With a large antero-septal MI, he could have either have mitral regurgitation (function or papillary muscle damage) or a VSD causing the systolic murmur. As this is in the lower left sternal edge, it would be important to get an urgent echocardiogram to confirm and refer for cardiothoracic surgery.



## [ Q: 1369 ] MRCPass - Cardiology

A 55 year old woman has a systolic murmur which is discovered by the GP who referred the patient for a cardiac opinion. She has a transthoracic echocardiogram which shows normal left ventricular function. There is no significant cardiac enlargement and she has a mitral valve prolapse with moderate mitral regurgitation. The left atrium diameter is 4.3 cm.

*What is the most appropriate course of action?*

- 1- No endocarditis prophylaxis necessary

- 2- Regular outpatient follow up with echocardiography
- 3- Anticoagulation with warfarin
- 4- Transoesophageal echocardiography
- 5- Refer for cardiac surgery

## Answer &amp; Comments

Answer: 2- Regular outpatient follow up with echocardiography

The normal left ventricular function and dimensions, as well as moderate mitral regurgitation suggests that cardiac surgery can be held off. She is in sinus rhythm and does not require anticoagulation (left atrium is only mildly enlarged - < 4cm is normal). Antibiotic prophylaxis is necessary. Transoesophageal echocardiography is not necessary unless she is being considered for surgery, or there is suspicion of endocarditis.



## [ Q: 1370 ] MRCPass - Cardiology

A 40 year old patient has a transthoracic echocardiogram as a follow up. He has a diagnosis of hypertrophic obstructive cardiomyopathy. Clinically he has a systolic murmur heard loudest in the right upper sternal edge. His ECG shows grossly large QRS complexes with LVH strain pattern.

*Which of the following suggests highest risk for sudden death?*

- 1- A left ventricular outflow tract gradient of 20 mmHg
- 2- Tricuspid regurgitation
- 3- Systolic anterior motion of mitral valve
- 4- ECG showing ventricular ectopics
- 5- Interventricular septal thickness of 4 cm

## Answer &amp; Comments

Answer: 5- Interventricular septal thickness of 4 cm

The LV outflow tract gradient is not significantly high in this patient, however, this may be variable with exercise. The large interventricular septal thickness of 4 cm (normal <1.3 cm) suggests very hypertrophic myocardium and high risk of outflow tract obstruction with exertion.



[ Q: 1371 ] MRCPass - Cardiology

A 60 year old man presents with breathlessness, visual blurring and headaches to A&E. During examination, he has a generalised tonic clonic seizure. He has a blood pressure of 240/120. Fundoscopy reveals retinal haemorrhages and exudates. The optic disc margin is not visualised.

*Which of the following medications is first line?*

- 1- Sodium nitroprusside
- 2- Labetalol
- 3- Diltiazem
- 4- Atenolol
- 5- Bendrofluazide

Answer & Comments

Answer: 1- Sodium nitroprusside

Malignant hypertension can present with pulmonary oedema, chest pain, headache, visual disturbance and also seizures. A fundoscopic examination may reveal flame-shaped retinal hemorrhages, soft exudates, or papilledema.

Sodium Nitroprusside has an immediate onset of action and short half-life. It acts by causing relaxation of vascular smooth muscle, resulting in vasodilation and inotropy. The dose is 0.25-10 mcg/kg/min IV. IV hydralazine, beta blockers and calcium channel blockers can also be used.



[ Q: 1372 ] MRCPass - Cardiology

A 35 year old patient with mild

mitral stenosis has atrial fibrillation. She presents unwell with fast AF and was DC cardioverted successfully.

*Which of the following medications is most effective for maintenance of sinus rhythm?*

- 1- Digoxin
- 2- Amiodarone
- 3- Atenolol
- 4- Diltiazem
- 5- Labetalol

Answer & Comments

Answer: 2- Amiodarone

Amiodarone is most effective for maintenance of sinus rhythm. However, because of its side effect profile, in a young patient, it is usually worth trying a beta blocker or calcium blocker before treating with amiodarone.



[ Q: 1373 ] MRCPass - Cardiology

A 25 year old man is being investigated for hypertension. The pressure data from cardiac catheterisation are as follows: RA 2 mm Hg, RV 22/2 mm Hg, PA 25/14 mm Hg, LA 7 mm Hg, LV 210/0-8 mm Hg, Aorta 180/100 mm Hg, Femoral artery 95/60 mm Hg.

*What is the likely diagnosis?*

- 1- Ascending aortic aneurysm
- 2- Aortic stenosis
- 3- Coarctation of the aorta
- 4- Aortic dissection
- 5- Aortic regurgitation

Answer & Comments

Answer: 3- Coarctation of the aorta

The history of hypertension and the pressure data suggest a diagnosis of coarctation of the aorta.



Coarctation of the aorta



## [ Q: 1374 ] MRCPass - Cardiology

A 60 year old lady is known to have severe mitral stenosis. She presents with breathlessness.

*On examination, which one of the following features is expected?*

- 1- Clubbing
- 2- Loud first heart sound
- 3- Wide pulse pressure
- 4- Ejection systolic murmur
- 5- Small left atrium

## Answer &amp; Comments

**Answer:** 2- Loud first heart sound

A loud first heart sound and tapping apex beat are common in significant mitral stenosis. A narrow pulse pressure is expected in severe mitral stenosis. Left atrium is inevitably dilated on CXR and echocardiography.



## [ Q: 1375 ] MRCPass - Cardiology

A 45 year old patient has been commenced on nifedipine for hypertension.

*Which of the following effect describes the action of nifedipine?*

- 1- Reduced sympathetic activity

- 2- Decreased activation of renin angiotensin aldosterone axis
- 3- Reduced peripheral capillary pressure
- 4- Reduced peripheral vascular resistance
- 5- Decrease vascular release of nitric oxide

## Answer &amp; Comments

**Answer:** 4- Reduced peripheral vascular resistance

Nifedipine is a dihydropyridine. The mechanism of action is smooth muscle relaxation and reduction in peripheral vascular resistance. However, peripheral capillary pressure is increased (this causes oedema in the ankles), there is increased sympathetic activity and increased activation of the renin angiotensin aldosterone axis. There is also increased vascular release of nitric oxide.



## [ Q: 1376 ] MRCPass - Cardiology

A 70 year man has been short of breath for 1 year. An electrocardiogram shows T wave inversion and q waves in the anterolateral leads at rest. He has cardiomegaly on the chest X ray. Clinical examination shows a third heart sound, a soft systolic murmur in the mitral area and also bilateral inspiratory crepitations in his lungs.

*Which of the following is he at risk of?*

- 1- Deep vein thrombosis
- 2- Pulmonary embolus
- 3- Systemic arterial embolus from mural thrombus
- 4- Venous thrombosis due to mural thrombus
- 5- Coronary artery thrombus due to mural thrombus

## Answer &amp; Comments

**Answer:** 3- Systemic arterial embolus from mural thrombus

This man has features indicating that he has an enlarged left ventricle from previous anterior myocardial infarction in the LAD artery territory. Poor LV function also causes his symptoms of heart failure. He is at risk of developing mural thrombus with embolus to the arterial circulation.



[ Q: 1377 ] MRCPass - Cardiology

A 45 year old man was referred by the GP for evaluation of a murmur. On examination, he was found to have a slow rising pulse and ejection systolic murmur in the aortic area. Aortic stenosis was suspected.

*In a patient presenting with aortic stenosis, which of following features would be helpful in establishing a diagnosis of congenital bicuspid valve?*

- 1- Calcified leaflets
- 2- Old age
- 3- A systolic ejection click
- 4- Commissural fusion on the echocardiogram
- 5- History of rheumatic fever

Answer & Comments

Answer: 3- A systolic ejection click

An aortic ejection sound (ejection click) soon after S1 is especially common if a bicuspid aortic valve is present.



[ Q: 1378 ] MRCPass - Cardiology

A 40 year old lady has presented with breathlessness. Her JVP is noted to be raised. Manometry reveals a rapid Y descent.

On examination, she has hepatomegaly, ascites and ankle oedema.

*What is the diagnosis?*

- 1- Dilated cardiomyopathy
- 2- Left ventricular failure
- 3- Constrictive pericarditis

- 4- Pericarditis
- 5- Myocardial infarction

Answer & Comments

Answer: 3- Constrictive pericarditis

Constrictive pericarditis leads to signs of right sided heart failure which are listed above. There is also a prominent and rapid X and Y descent of the waveform.



[ Q: 1379 ] MRCPass - Cardiology

A 57 year old lady who had a past history of Myocardial Infarction and subsequent CABG was known to have left ventricular dysfunction on the echocardiogram. She has no symptoms at present. She was on aspirin, ramipril and diuretic. On examination there were no signs of heart failure.

*What drug should be added next?*

- 1- Amlodipine
- 2- Bisoprolol
- 3- Clopidogrel
- 4- Atorvastatin
- 5- Digoxin

Answer & Comments

Answer: 2- Bisoprolol

In a patient with left ventricular dysfunction and known history of ischaemic heart disease, a beta blocker should be added (CIBIS II Study).



[ Q: 1380 ] MRCPass - Cardiology

A 35 year old lady has progressive shortness of breath. Following an echocardiogram, she is found to have likely rheumatic mitral stenosis is now being considered for percutaneous mitral valvuloplasty.



*Which of the following would contraindicate this procedure?*

- 1- Dilated left atrium
- 2- Atrial fibrillation
- 3- Aortic regurgitation
- 4- Heavy calcification of the mitral valve
- 5- Long history of mitral stenosis

#### Answer & Comments

**Answer:** 4- Heavy calcification of the mitral valve

The contraindications to aortic valvuloplasty are heavy MV calcification, thrombus in the left atrial appendage on transoesophageal echocardiography and severe mitral regurgitation. These patients are indicated for mitral valve surgery instead.



#### [ Q: 1381 ] MRCPass - Cardiology

A 25 year old man whose brother had hypertrophic cardiomyopathy was referred for a cardiological assessment. His echocardiogram confirmed the condition.

*Which one of following echocardiographic features is the most important risk factor for sudden cardiac death?*

- 1- Thickness of septal wall
- 2- Systolic anterior motion of the mitral valve
- 3- Severity of mitral regurgitation
- 4- Gradient across left ventricular outflow tract
- 5- An enlarged left atrium

#### Answer & Comments

**Answer:** 1- Thickness of septal wall

The greater thickness of septum, the more likelihood of left ventricular outflow tract obstruction. The next most important factor would be the gradient across the outflow tract.



#### [ Q: 1382 ] MRCPass - Cardiology

A 55 year old patient had myocardial infarction 6 days ago. He suddenly develops dyspnoea, cough and frothy sputum. For the first time a harsh systolic murmur is heard over the praecordium.

*This sequence of events might be caused by:*

- 1- Pulmonary embolism
- 2- Aortic dissection
- 3- Tricuspid regurgitation
- 4- Ruptured papillary muscle
- 5- Ruptured aortic cusp

#### Answer & Comments

**Answer:** 4- Ruptured papillary muscle

Following an MI, ruptured papillary muscle or interventricular septum is most likely to cause the combination of pulmonary oedema and new murmur (either mitral regurgitation or due to VSD).



#### [ Q: 1383 ] MRCPass - Cardiology

A 30 year old man is brought to A & E with severe acute chest pain radiating to the back. He is pale and anxious.

On examination the blood pressure is 150/90 mmHg and he was noted to have blue sclerae.

*Which of the following conditions has predisposed to this complication?*

- 1- Coarctation of the aorta
- 2- Ischaemic heart disease
- 3- Rheumatic fever
- 4- Hypertrophic cardiomyopathy
- 5- Marfan's syndrome

#### Answer & Comments

**Answer:** 5- Marfan's syndrome

Marfan's syndrome is one of the causes of blue sclerae. The clinical diagnosis is aortic



dissection. Other predisposing disorders to aortic dissection are: essential hypertension, atherosclerosis, bicuspid aortic valve, connective tissue disorders, Marfan's syndrome, Ehlers-Danlos syndrome, adult polycystic kidney disease.



[ Q: 1384 ] MRCPass - Cardiology

A 68 year old man with severe aortic stenosis presented with melaena. Upper GI endoscopy was normal.

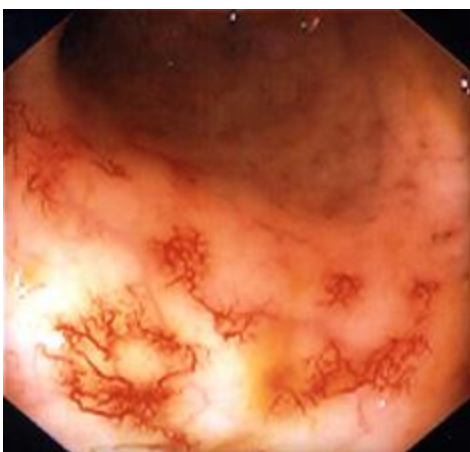
*What is the likely cause of GI bleeding?*

- 1- Haemorrhoids
- 2- Caecal carcinoma
- 3- Duodenal ulcer
- 4- Angiodysplasia
- 5- Ulcerative colitis

Answer & Comments

Answer: 4- Angiodysplasia

Angiodysplasia is the most common vascular abnormality of the GI tract. After diverticulosis, it is the second leading cause of lower GI bleeding in patients older than 60 years. Angiodysplasia has been reported to be associated with aortic stenosis.



Angiodysplasia



[ Q: 1385 ] MRCPass - Cardiology

A 35 year old man has a dominant R

in lead V1 on the ECG during routine examination.

*Which one of the following is a recognised cause?*

- 1- Pericarditis
- 2- Turner's syndrome
- 3- Dextrocardia
- 4- Aortic stenosis
- 5- Tricuspid regurgitation

Answer & Comments

Answer: 3- Dextrocardia

A dominant R in lead V1 on the ECG is associated with :

- primary pulmonary HT
- Right bundle branch block (RBBB) (including Ebstein's anomaly)
- Wolf-Parkinson-White syndrome Type A
- Dextrocardia
- Posterior MI
- Duchene muscular dystrophy



Dextrocardia ECG



[ Q: 1386 ] MRCPass - Cardiology

A 62 year old lady with known congestive heart failure and renal impairment. She presents with features of worsening heart failure, and also mentioned about recent decreased urine output.

*What is the most useful investigation for the current condition?*

- 1- Electrolytes
- 2- Urea
- 3- Creatinine
- 4- Echocardiogram
- 5- Chest x ray

#### Answer & Comments

Answer: 4- Echocardiogram

A patient with symptoms of congestive cardiac failure and renal impairment may have deteriorating left ventricular function. This may subsequently lead to cardiogenic shock, the severity of LV function should be documented to guide further management.



#### [ Q: 1387 ] MRCPass - Cardiology

A 28 year woman who is 20 weeks pregnant is seen in the outpatient clinic and noted to have a sustained blood pressure of 180/95 mmHg.

*What is the most appropriate antihypertensive therapy for this patient?*

- 1- Methyldopa
- 2- Hydralazine
- 3- Nifedipine
- 4- Lisinopril
- 5- Atenolol

#### Answer & Comments

Answer: 1- Methyldopa

Methyldopa is the safest agent to use in the first and second trimester of pregnancy.

Beta blockers may cause intrauterine growth retardation. ACE inhibitors have also been suggested to have teratogenic effects.



#### [ Q: 1388 ] MRCPass - Cardiology

A cardiac technician has done an

echocardiogram and refers the patient to you with a report.

*Which one of the following measures is essential for the calculation of ejection fraction?*

- 1- Ventricular wall thickness
- 2- Aortic valve diameter
- 3- Left ventricular end diastolic diameter
- 4- Stroke volume
- 5- Aortic valve velocity

#### Answer & Comments

Answer: 3- Left ventricular end diastolic diameter

Ejection fraction measurement requires measurements during both the end systolic phase or end diastolic phases on the transthoracic echocardiogram. This could be in the form of ventricular diameter measurement or area of the ventricle (in both cases volumes are estimated by the echo machine). The end systolic and end diastolic volumes are then subtracted to obtain an ejection fraction. Stroke volume itself is not sufficient to give the ejection 'fraction' hence needs comparison either systolic or diastolic measurements.



#### [ Q: 1389 ] MRCPass - Cardiology

A 55 year old man with angina has familial hypercholesterolaemia. His father and uncle both have coronary heart disease.

*Which one of the following is a typical feature for the condition?*

- 1- Plantar xanthomas
- 2- Autosomal recessive
- 3- Increased LDL concentrations
- 4- Hypertriglyceridaemia
- 5- Increased expression of LDL receptors

## Answer &amp; Comments

**Answer:** 3- Increased LDL concentrations

Familial hypercholesterolaemia is an autosomal dominant condition. There are increased LDL concentrations due to reduced numbers of LDL receptors. Hypertriglyceridaemia does not usually occur and HDL concentrations are usually decreased. Tendon xanthomas occur, not plantar xanthomas.



[ Q: 1390 ] MRCPass - Cardiology

A 48 year old male is referred with impotence. He has a history of angina, hypertension and type 2 diabetes.

*Which one of the following drugs that he takes would present a contraindication towards him receiving Sildenafil?*

- 1- Aspirin
- 2- Bendrofluazide
- 3- Isosorbide Mononitrate
- 4- Lisinopril
- 5- Metformin

## Answer &amp; Comments

**Answer:** 3- Isosorbide Mononitrate

There is a significant risk of hypotension when sildenafil is used with nitrates. Hence it is contraindicated in patients with a history of angina or ischaemic heart disease.



[ Q: 1391 ] MRCPass - Cardiology

A 65 year old woman who is on digoxin has symptoms of nausea and dizziness. On examination, her heart rate is 35 bpm and an ECG shows prolonged PR interval with first degree heart block.

*Digoxin toxicity is more likely with which of the following conditions?*

- 1- Hypocalcaemia

2- Hypothyroidism

3- Ramipril use

4- Hyperkalaemia

5- Hypokalaemia

## Answer &amp; Comments

**Answer:** 5- Hypokalaemia

Hypomagnesaemia, hypokalaemia, and hypercalcaemia are common metabolic disturbances which may worsen digoxin toxicity.

Bradycardia, prolonged PR interval, shortened QT interval and various forms of heart block can occur in digoxin toxicity.



[ Q: 1392 ] MRCPass - Cardiology

A 70 year old man has a history of syncope. He is found to have runs of nonsustained ventricular tachycardia on ECGs done in casualty. He has a past medical history of hypertension. Investigations show a serum magnesium of 0.6 mmol/l (0.75-1).

*Which one of the following is the most likely cause of hypomagnesaemia?*

- 1- Calcium channel blockers
- 2- Diuretic therapy
- 3- Hyperphosphataemia
- 4- Diarrhoea and vomiting
- 5- Hypercalcaemia

## Answer &amp; Comments

**Answer:** 2- Diuretic therapy

Magnesium is present in greatest concentration within the cell and is the second most abundant intracellular cation after potassium. Most renal reabsorption of magnesium occurs in the proximal tubule and the thick ascending limb of the loop of Henle.

Significant losses of magnesium that result in hypomagnesaemia may result from chronic

diarrhea, laxative abuse, inflammatory bowel disease, or neoplasm, diuretics (thiazide, loop diuretics).



[ Q: 1393 ] MRCPass - Cardiology

A 30 year old lady was diagnosed with long QT syndrome on routine investigation for her insurance scheme.

*Which one of the following drugs should be started?*

- 1- Atenolol
- 2- Digoxin
- 3- Amiodarone
- 4- Verapamil
- 5- Lignocaine

Answer & Comments

Answer: 1- Atenolol

In the management of a case of congenital LQT syndrome, beta-blockade is usually effective in preventing ventricular tachyarrhythmias in the patient. If symptomatic or if there are ventricular arrhythmias documented, an intracardiac cardioverter defibrillator should be considered.



[ Q: 1394 ] MRCPass - Cardiology

A 23-year-old male presented with a 2-year history of breathlessness on exertion.

On examination, there was a systolic murmur in the pulmonary area and wide fixed splitting of the second heart sound.

*In which of these conditions is fixed and wide splitting of the second heart sound seen?*

- 1- Fallot's tetralogy
- 2- Ventricular septal defect
- 3- Atrial septal defect
- 4- Pulmonary stenosis
- 5- Aortic regurgitation

Answer & Comments

Answer: 3- Atrial septal defect

The second heart sound typically occurs with A2 (aortic) and P2 (pulmonary).

Wide splitting can occur with delayed pulmonary closure (P2) as in right bundle branch block (RBBB), pulmonary stenosis and ventricular septal defect (VSD). However, FIXED wide splitting only occurs in ASD.



[ Q: 1395 ] MRCPass - Cardiology

A 65 year old man with a history of previous myocardial infarction presents with palpitations. The ECG shows a broad complex tachycardia at a rate of 150 beats/min and a blood pressure of 90/55 mmHg.

*The first line treatment should be:*

- 1- Sotalol
- 2- Flecainide
- 3- Verapamil
- 4- Amiodarone
- 5- Lignocaine

Answer & Comments

Answer: 4- Amiodarone

The likely diagnosis is ventricular tachycardia. There are early signs of haemodynamic instability (blood pressure is low). In this case, amiodarone is the best agent as first line. Lignocaine and flecainide can also be used but are not considered first line when patients are unstable.



[ Q: 1396 ] MRCPass - Cardiology

A 50 year old taxi driver is followed up 8 weeks after an anterior myocardial infarction. He underwent rescue angioplasty with stenting to the LAD vessel following failed thrombolysis. Since then he has had no further symptoms of angina.

*Which should be the next investigation?*

- 1- Bruce protocol exercise test
- 2- Modified Bruce protocol exercise test
- 3- Repeat coronary angiography to check stent patency
- 4- Dobutamine stress echocardiography
- 5- Cardiac thallium scan

#### Answer & Comments

**Answer:** 1- Bruce protocol exercise test

For public vehicle drivers and heavy goods vehicles drivers which are classed under Group 2 entitlement by the DVLA, driving is disqualified for 6 weeks for MI, CABG and angioplasty.

Following this, they have to undergo a Bruce protocol exercise test to stage III without significant ST changes or anginal symptoms.



[ Q: 1397 ] MRCPass - Cardiology

A 45 year old man has worsening breathlessness. On examination, he has a systolic blood pressure of 115 mmHg which drops to 90mmHg during inspiration.

*Which of the following conditions is most likely to be present?*

- 1- Congestive cardiac failure
- 2- Cardiac tamponade
- 3- Atrial fibrillation
- 4- Ventricular tachycardia
- 5- ICD implantation

#### Answer & Comments

**Answer:** 2- Cardiac tamponade

The clinical feature is pulsus paradoxus. This is defined as a drop in blood pressure by more than 20mmHg during inspiration. It is a definite sign of cardiac tamponade, but may occasionally occur with acute constrictive pericarditis and COPD.



[ Q: 1398 ] MRCPass - Cardiology

A 50 year old lady is currently asymptomatic but undergoes a medical examination. Her ECG shows left bundle branch block.

*During clinical examination, which one of these signs is likely to be found?*

- 1- Tricuspid regurgitation
- 2- Systolic murmur in the mitral area
- 3- Third heart sound
- 4- Reversed splitting of the second heart sound
- 5- Diastolic murmur in the pulmonary area

#### Answer & Comments

**Answer:** 4- Reversed splitting of the second heart sound

The second heart sound comprises of aortic (A2) and pulmonary (P2) component. In LBBB, the aortic closure is delayed because the left ventricle contracts later. This then causes reversed splitting (A2P2 ? P2A2) of the second heart sound.



[ Q: 1399 ] MRCPass - Cardiology

A 50 year man presents with lightheadness. He has frequent nonsustained ventricular tachycardia on the ECG and cardiac monitor. His bloods show a Hb 13.0 g/dl, WCC  $7 \times 10^9/L$ , platelets  $230 \times 10^9/L$ , urea 11mol/l, creatinine  $80\mu\text{mol/l}$ , sodium 134 mmol/l, potassium 3.2 mmol/l, serum magnesium of 0.6 mmol/l (0.75).

*Which one of the following is likely to be responsible for his arrhythmias?*

- 1- Poor diet
- 2- Alcoholism
- 3- Frusemide
- 4- Diarrhoea
- 5- Hyperphosphataemia

## Answer &amp; Comments

Answer: 3- Frusemide

The likely cause of the arrhythmias is hypomagnesaemia and hypokalaemia, which is most commonly associated with diuretic use.



[ Q: 1400 ] MRCPass - Cardiology

A 35 year old man presents with chest pain to casualty following attendance at a party. His friend reports that he has using large doses of crack cocaine. His ECG shows ST elevation of 4 mm in the anterior leads, and he is managed as having acute myocardial infarction. There is no previous cardiac history.

*Which of the following should be avoided?*

- 1- GTN
- 2- Aspirin
- 3- Diltiazem
- 4- Diamorphine
- 5- Atenolol

## Answer &amp; Comments

Answer: 5- Atenolol

The main effect of cocaine is inhibition of noradrenaline and dopamine re-uptake in the synaptic terminals. It is a potent sympathomimetic agent, and causes a rise in heart rate and blood pressure. It also causes significant coronary artery spasm, and can precipitate myocardial infarction which is potentiated by the increase in myocardial oxygen demand. Beta blockers such as atenolol can precipitate worsening of the coronary vasospasm and should be avoided. Treatment is with nitrates or calcium channel blockers (which are vasodilators).



[ Q: 1401 ] MRCPass - Cardiology

A 50 year old man who had a aortic

valve replacement 8 months ago is admitted with fevers, positive blood cultures and suspected prosthetic valve endocarditis.

*Which one of the following features suggests worsening of the condition?*

- 1- Paresthesiae
- 2- Vitiligo
- 3- Prosthetic valve click
- 4- Systolic flow murmur
- 5- Prolonged PR interval on the ECG

## Answer &amp; Comments

Answer: 5- Prolonged PR interval on the ECG

Infections of the prosthetic valve beyond 6 months after surgery are most often due to *Streptococcus viridans*. Early infections are usually due to *Staphylococcus epidermidis*

(coagulase negative).

One of the major dangers with aortic valve endocarditis is an aortic root abscess. This can lead to prolonging of the PR interval by erosion into the adjacent AV node, hence daily ECGs are useful for monitoring.



[ Q: 1402 ] MRCPass - Cardiology

A 60 year old man has had an anterior infarct. He hates to take medications and agrees to have only one drug a day.

*Which of the following drug classes has been shown to have the maximal benefit in the peri-infarct period?*

- 1- Alpha blockers
- 2- Nitrates
- 3- Calcium Channel blockers
- 4- Beta blockers
- 5- Statin

## Answer &amp; Comments

Answer: 4- Beta blockers



Beta blockade has been shown to be beneficial when started as soon as possible. This was demonstrated in the ISIS-1 trial where atenolol reduced mortality compared to the control group at 1 year.



[ Q: 1403 ] MRCPass - Cardiology

A 20 year old man attends A+E because of palpitations. Before they could do an ECG his palpitations self terminated. The ECG which was done showed sinus rhythm with a PR interval of 70 ms.

*What is the mechanism of the patient's tachycardia?*

- 1- Atrial flutter
- 2- Atrioventricular reentry tachycardia
- 3- Atrioventricular nodal reentry tachycardia
- 4- Ventricular tachycardia
- 5- Atrial tachycardia

Answer & Comments

**Answer:** 2- Atrioventricular reentry tachycardia

The PR interval is short (<3 small squares or <120 ms) suggesting Wolff Parkinson White syndrome. There may be an accessory pathway which predisposes to AVRT rather than AVNRT.



[ Q: 1404 ] MRCPass - Cardiology

A 22 year old engineering student presents with a history of breathlessness on exertion and orthopnoea, fatigue and anorexia.

On examination he has peripheral oedema, a low volume pulse, elevated JVP with a rapid y descent, no inspiratory increase in JVP, a quiet praecordium and characteristic auscultatory features of his condition. He also has hepatomegaly and ascites.

ECG shows a widened QRS complex with diffuse non-specific repolarisation changes.

*What is the likely diagnosis?*

- 1- Constrictive pericarditis
- 2- Cardiomyopathy
- 3- Congestive cardiac failure
- 4- Restrictive cardiomyopathy
- 5- Myocarditis

Answer & Comments

**Answer:** 4- Restrictive cardiomyopathy

The clinical radiological and ECG features suggest the patient has a restrictive cardiomyopathy. The characteristic auscultatory feature of this condition is a fourth heart sound reflecting increased atrial contraction in an effort to overcome the reduced compliance of the ventricle. A pericardial knock would be a feature of constrictive pericarditis, which has been ruled out by the absence of Kussmaul's sign (inspiratory increase in JVP) and absence of pericardial calcification.



[ Q: 1405 ] MRCPass - Cardiology

A 42 year old man presents with a regular narrow complex tachycardia of 160 bpm. Adenosine is considered by the duty medical registrar.

*Which of the following is a contraindication to using iv adenosine?*

- 1- Wolff Parkinson White syndrome
- 2- Ventricular tachycardia
- 3- Asthma
- 4- Ischaemic heart disease
- 5- Gastric ulcer

Answer & Comments

**Answer:** 3- Asthma

Adenosine can produce profound bronchospasm especially in asthmatics, and it is contraindicated.



## [ Q: 1406 ] MRCPass - Cardiology

A 40 year old man is being assessed for endocarditis according to Duke's criteria.

*Which of the following is a major criteria for diagnosing infective endocarditis?*

- 1- Roth's spots
- 2- Vegetation seen on Echocardiogram
- 3- Splinter haemorrhages
- 4- Fever
- 5- Glomerulonephritis

## Answer &amp; Comments

**Answer:** 2- Vegetation seen on Echocardiogram

A definite diagnosis of endocarditis (Duke's criteria) is achieved when 2 major criteria are present, or 1 major and 3 minor criterias.

Major criteria:

blood culture positive for typical organisms

persistent bacteremia

positive ECHO for vegetations

abscess or valve dehiscence

Minor criteria:

valvular heart disease or IV drug user

fever greater than 38°C

vasculitis

skin lesions

suggestive ECHO (but not definite)

positive blood culture



## [ Q: 1407 ] MRCPass - Cardiology

A 40 year old man presents with a history of dyspnoea. On examination he has a jerky carotid pulse, an ejection systolic murmur is audible at the base of the heart and a pan systolic murmur at the apex.

Echocardiography shows asymmetric left ventricular hypertrophy and systolic anterior motion of the mitral valve.

*The patient's symptoms may be treated with:*

- 1- Ramipril
- 2- Frusemide
- 3- Aspirin
- 4- Atenolol
- 5- Digoxin

## Answer &amp; Comments

**Answer:** 4- Atenolol

The diagnosis is hypertrophic obstructive cardiomyopathy as suggested by the signs of jerky pulse, ejection systolic murmur and echocardiographic findings. In these patients, symptoms such as breathlessness is best treated with  $\beta$ -blockers and verapamil either alone or in combination. Disopyramide is also used second line.



## [ Q: 1408 ] MRCPass - Cardiology

A 50 year old man has a history of myocardial infarction 6 months ago. He has had 2 episodes of collapses and a 24 hour tape shows episodes of non sustained VT. Coronary angiography shows a 99% LAD artery stenosis and angioplasty was unsuccessful due to the tortuosity of the vessel. Echocardiography shows a dilated LV at 5.9cm with an ejection fraction of 30%.

*Which is the most appropriate therapy?*

- 1- Amiodarone
- 2- Atenolol
- 3- Permanent pacemaker
- 4- Implantable cardiac defibrillator
- 5- Stem cell therapy

## Answer &amp; Comments

**Answer:** 4- Implantable cardiac defibrillator

This patient satisfies two NICE guidelines for ICD insertion. The first is an ejection fraction of <30% with syncopal VT. The second is syncopal VT following myocardial infarction.

The MADIT II trial showed that in patients with a previous MI and reduced left ventricular ejection fraction (<30%), the prophylactic use of an ICD, in addition to medications, significantly reduced the risk of death.



[ Q: 1409 ] MRCPass - Cardiology

A 50 year old patient has tearing interscapular chest pain. His ECG shows no ST changes, but a CT scan with contrast showed aortic dissection. His blood pressure is 140/70 mmHg.

*Which is the most important management?*

- 1- Intravenous labetalol
- 2- Ramipril
- 3- Refer for urgent cardiothoracic surgery
- 4- Echocardiography
- 5- Coronary angiogram

Answer & Comments

Answer: 1- Intravenous labetalol

Immediate management of aortic dissection is aggressive blood pressure control.

Intravenous labetalol or sodium nitroprusside can be used. Once this is done, the patient can be further assessed with coronary angiography or be referred for urgent surgery.



[ Q: 1410 ] MRCPass - Cardiology

A 40 year old man with previous history of ischaemic heart disease and Type I diabetes presents with heart rate of 150. His ECG shows atrial fibrillation.

His blood tests show Hb 15 g/dl, WCC  $10 \times 10^9/L$ , Platelets  $280 \times 10^9/L$ , urea  $13 \mu\text{mol/l}$ , creatinine  $160 \mu\text{mol/l}$ , sodium  $138 \text{ mmol/l}$ , potassium  $3.8 \text{ mmol/l}$ .

The attending doctor decides to start digoxin.

*Which one of these factors is most important in taking into account the appropriate loading dose of the drug?*

- 1- Volume of distribution
- 2- Absorption
- 3- First pass metabolism
- 4- Creatinine clearance
- 5- Patient weight

Answer & Comments

Answer: 4- Creatinine clearance

Digoxin is renally excreted. The plasma level of the drug and its half life is dependent on the volume of distribution and renal clearance. In this example, the more important factor is renal clearance. A lower loading dose should be chosen in patients with renal impairment and 6 hour post dose digoxin levels should be measured.



[ Q: 1411 ] MRCPass - Cardiology

A 55 year old lady has dental phobia but has finally gone to the dentist following severe toothaches and is told she has dental abscesses. She is brought into A+E with high fevers by a relative. She is found to have a diastolic murmur in the aortic area.

*Which one of these is a sign of endocarditis?*

- 1- Roslyn's Spot
- 2- Hepatomegaly
- 3- Loss of peripheral pulses
- 4- Pulmonary fibrosis
- 5- Blood on urine dipstick

Answer & Comments

Answer: 5- Blood on urine dipstick

Blood on the urine dipstick indicates renal vasculitis due to microemboli from

vegetations in endocarditis. Osler's nodes are small reddish tender areas on the pulp of fingers or toes. Janeway lesions are reddish spots on fingers or toes, but are painless. Splenomegaly occurs. Roth's spots are vasculitic lesions on the retina. Bouchard's nodes occur in osteoarthritis.





[ Q: 1412 ] MRCPass - Basic Science

A 30 year old patient develops haemolytic anaemia, which is thought to be due to penicillin treatment.

*Which is the correct type of hypersensitivity reaction to describe this?*

- 1- Type I
- 2- Type II
- 3- Type III
- 4- Type IV
- 5- Type V

#### Answer & Comments

Answer: 2- Type II

Drug induced haemolytic anaemia is due to a type II hypersensitivity reaction. The types are:

Type I - Anaphylaxis due to IgE from mast cells and involving basophils

Type II - Cytotoxic due to free antibodies in the circulation (usually IgG, IgM and IgA) leading to cell lysis due to antigen-antibody cross-linking and complement fixation

Type III - Immune complex deposition associated with circulating IgG

Type IV - Cell-mediated due to interaction between T cells and membrane-bound antigens



[ Q: 1413 ] MRCPass - Basic Science

*Which red blood cell antigen is involved in entry of Plasmodium vivax into red cells?*

- 1- Rhesus S
- 2- Rhesus D
- 3- Duffy
- 4- GP24
- 5- Kell

#### Answer & Comments

Answer: 3- Duffy

Duffy negative patients are resistant to developing plasmodium vivax infection. The Duffy antigen receptor facilitates entry of Plasmodium Vivax into red blood cells.



[ Q: 1414 ] MRCPass - Basic Science

A 20 year old man has been newly diagnosed with Gaucher's Disease. *This is associated with a deficiency of which one of the following enzymes?*

- 1- Glucocerebrosidase
- 2- Sphingomyelinase
- 3- Iduronidase
- 4- Hexosaminidase A
- 5- Arylsulphatase A

#### Answer & Comments

Answer: 1- Glucocerebrosidase

Gaucher's disease is associated with the enzyme glucocerebrosidase. As a result, glucocerebroside accumulates, principally in the phagocytic cells of the body but also sometimes in the central nervous system neurones.

Three types of Gaucher disease are described. Common to all three types are the presence of hepatosplenomegaly and of large glucocerebroside containing reticuloendothelial histiocytes, or Gaucher cells, in the bone marrow .

The other associations are:

Tay Sachs disease - Hexosaminidase A deficiency

Niemann Pick disease - Sphingomyelinase deficiency

Metachromatic leukodystrophy - Arylsulphatase A deficiency



Hurler's syndrome - Iduronidase deficiency



[ Q: 1415 ] MRCPass - Basic Science

*Which of the following diseases is X-linked inherited?*

- 1- Alpha 1 antitrypsin deficiency
- 2- Haemochromatosis
- 3- Marfan's syndrome
- 4- G6PD deficiency
- 5- Wilson's disease

#### Answer & Comments

Answer: 4- G6PD deficiency

G6PD deficiency's inheritance is X linked recessive. Duchenne muscular dystrophy is another example of a disease which has X linked recessive inheritance. X linked hypophosphataemic rickets is X linked dominant.



[ Q: 1416 ] MRCPass - Basic Science

A 22 year old male who is tall and thin, is found to have a high arched palate, downward dislocation of lens, chest wall deformities and livedo reticularis.

*Which one of the following is also associated with this syndrome?*

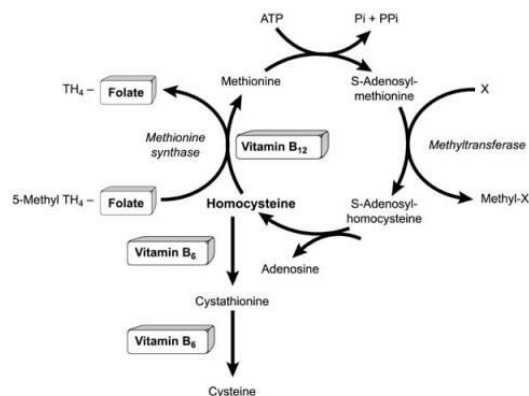
- 1- Fibrillin gene defect
- 2- Positive Guthrie test
- 3- Autosomal Dominant inheritance
- 4- Osteopetrosis
- 5- Methionine accumulation

#### Answer & Comments

Answer: 5- Methionine accumulation

The diagnosis is homocystinuria (Marfan's causes upward lens dislocation and fibrillin gene defect). Homocystinuria is an autosomal recessive disorder. Reduced activity of

cystathionine synthase results in accumulation of homocysteine methionine. Osteoporosis and osteopetrosis are also seen in homocystinuria.



Metabolism of Homocysteine



[ Q: 1417 ] MRCPass - Basic Science

A postgraduate student is studying HIV replication.

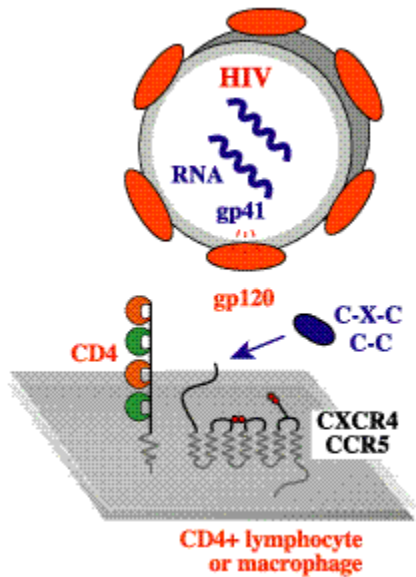
*Which of the following is important in the replication or transmission of HIV-1?*

- 1- Trypsin
- 2- Bax
- 3- GP 120
- 4- P53
- 5- MHC

#### Answer & Comments

Answer: 3- GP 120

HIV reverse transcriptase, integrase and protease are key enzymes essential for HIV replication. The HIV genome contains the genes: tat and rev along with nef, env, gag and pol. The GP 120 is the major protein on the surface of HIV that interacts with host cells. HIV binds to cell surface CD4 but enters cells through chemokine receptors including CXCR4 and CCR5. Thymidine kinase is produced by the herpes simplex virus.



[ Q: 1418 ] MRCPass - Basic Science

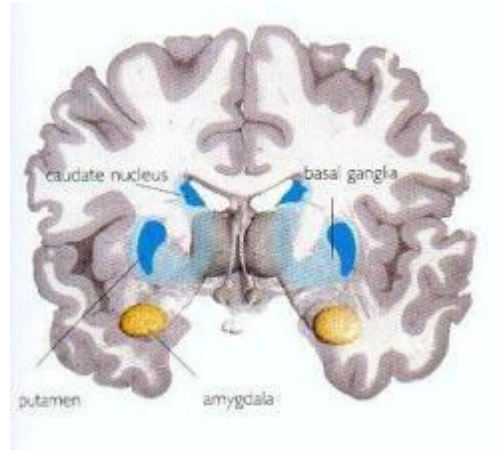
Which of the following anatomical structures, if damaged, leads to choreiform movement abnormalities?

- 1- Caudate nucleus
- 2- Subthalamic nucleus
- 3- Substantia nigra
- 4- Hippocampus
- 5- Corpus callosum

#### Answer & Comments

Answer: 1- Caudate nucleus

Caudate nucleus, putamen and globus pallidus are areas within the basal ganglia which, when impaired, can lead to choreiform movements. Subthalamic nucleus lesion causes hemiballismus. Hippocampus involvement can cause memory loss.



[ Q: 1419 ] MRCPass - Basic Science

A 35 year old man presents with bleeding oesophageal varices.

*On examination he has Kayser- Fleischer rings in the cornea. The inheritance of this disorder is:*

- 1- Polygenic inheritance
- 2- X-linked dominant
- 3- X-linked recessive
- 4- Autosomal recessive
- 5- Autosomal dominant

#### Answer & Comments

Answer: 4- Autosomal recessive

The diagnosis is Wilson's disease, which has autosomal recessive inheritance.



Kayser Flescher Ring in Wilson's disease



[ Q: 1420 ] MRCPass - Basic Science

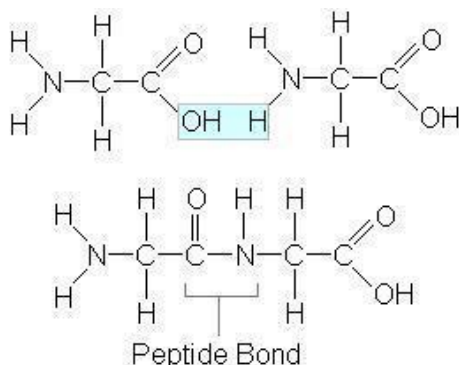
Which of these is the correct description of peptide bonds?

- 1- Bonds between 2 carboxylic acid groups of amino acids
- 2- Hydrogen bonds between 2 side chains of amino acids
- 3- Bonds between the carboxylic acid group of one amino acid and the amino group of the next
- 4- Bonds between alternating purine and pyrimidine molecules
- 5- Covalent bonds between two amino acids

#### Answer & Comments

**Answer:** 3- Bonds between the carboxylic acid group of one amino acid and the amino group of the next

Peptide bonds are linkages between the carboxylic acid (COOH) group of one amino acid and the amino (NH<sub>2</sub>) group of the next amino acid.



#### [ Q: 1421 ] MRCPass - Basic Science

A 45 year old man with a new diagnosis of hepatitis B is keen to know more about the prognosis of the disease.

What percentage of patients is likely to develop chronic infection?

- 1- 100%
- 2- 80%
- 3- 50%

4- 10%

5- 5%

#### Answer & Comments

**Answer:** 4- 10%

The virus can be found in other cell types apart from hepatocytes, such as renal tubular cells. 10% of patients with hepatitis B develop chronic infection as compared to hepatitis C where 80% develop chronic infection. The likelihood of virus clearance increases with better cell mediated immune responses.



#### [ Q: 1422 ] MRCPass - Basic Science

A 25 year old man with cystic fibrosis is referred for investigation of poor fertility.

What is likely to have caused this?

- 1- Malabsorption and vitamin deficiency
- 2- Abnormal oestrogen metabolism
- 3- Acidification of seminal fluid
- 4- Hypopituitarism
- 5- Failure of development of vas deferens

#### Answer & Comments

**Answer:** 5- Failure of development of vas deferens

Infertility in cystic fibrosis is due to maldevelopment of vas deferens.



#### [ Q: 1423 ] MRCPass - Basic Science

A child has an endocrine condition which has caused short stature.

Which of the following conditions may be detectable by growth monitoring?

- 1- Thyrotoxicosis
- 2- Pseudohypoparathyroidism
- 3- Hypothyroidism
- 4- Insulin dependent diabetes mellitus

## 5- XYY Syndrome

## Answer &amp; Comments

Answer: 3- Hypothyroidism

Growth monitoring can aid detection of the following conditions:

hypothyroidism

growth hormone insufficiency

Turners & Noonan's syndrome, skeletal dysplasias

celiac disease, inflammatory bowel disease

intracranial tumours



[ Q: 1424 ] MRCPass - Basic Science

A 35 year old lady has psychogenic diabetes insipidus. Her blood results show - sodium 124 mmol/l; potassium 4.0 mmol/l; Urea 5 mmol/l; Creatinine 30 mmol/l; Glucose 8 mmol/l.

*What is the serum osmolality [mosmol/Kg]?*

1- 255

2- 261

3- 264

4- 278

5- 284

## Answer &amp; Comments

Answer: 2- 261

Serum osmolality is  $2 \times \text{sodium} + \text{Urea} + \text{Glucose} = 248 + 5 + 8 = 261 \text{ mOsmol/Kg}$ . Normal is 280 to 305 hence she has low serum osmolality. An alternative formula is  $1.9 \times (\text{Na} + \text{K}) + \text{Ur} + \text{Glucose}$ .



[ Q: 1425 ] MRCPass - Basic Science

*Which one of the following set of offsprings would a X-linked dominant condition be transmitted to?*

- 1- None of the sons of an affected woman
- 2- Half of the daughters of an affected woman
- 3- All of the sons of an affected woman
- 4- All children of an affected woman
- 5- All children of an affected man

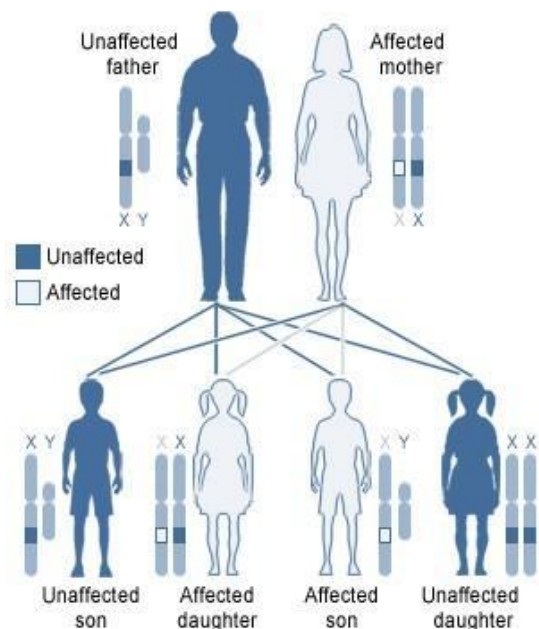
## Answer &amp; Comments

Answer: 2- Half of the daughters of an affected woman

The classical example of an X-linked dominant inherited condition is familial hypophosphataemic rickets. Remember to differentiate between X linked recessive and X linked dominant.

An affected woman has the chromosomes XxX and will transmit this to half of her daughters who will either have

XX or XxX chromosomes. Similarly, half of the sons will have the disease XxY or XY chromosomes.



X linked dominant inheritance with an affected mother



[ Q: 1426 ] MRCPass - Basic Science

Which one of these conditions is an Autosomal Dominant disorder?

- 1- Ataxia Telangiectasia
- 2- Achondroplasia
- 3- Alkaptonuria
- 4- Cystic Fibrosis
- 5- Phenylketonuria

## Answer &amp; Comments

Answer: 2- Achondroplasia

The list of autosomal dominant disorders are:

- achondroplasia
- antithrombin III deficiency
- Ehlers-Danlos syndrome
- Familial hypercholesterolaemia
- Gilbert's disease
- hereditary haemorrhagic telangiectasia
- hereditary elliptocytosis, hereditary spherocytosis
- Huntington's disease
- idiopathic hypoparathyroidism
- intestinal polyposis
- marble bone disease
- Marfan's syndrome
- neurofibromatosis
- polycystic kidney disease (adult)
- protein C deficiency
- osteogenesis imperfecta
- Treacher Collins syndrome
- tuberous sclerosis
- Von Willebrand's disease



[ Q: 1427 ] MRCPass - Basic Science

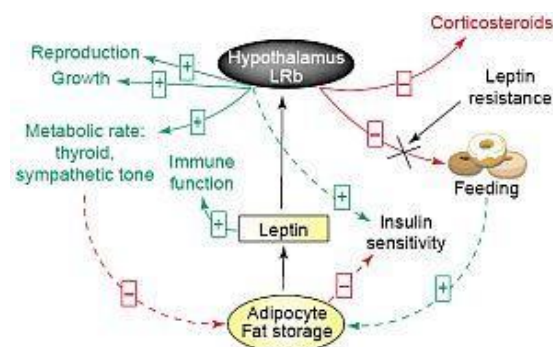
What is the effect of leptin on body metabolism?

- 1- Decreases energy usage
- 2- Stimulates neuropeptide Y
- 3- Increases appetite
- 4- Stimulates pancreatic proteases
- 5- Reduces adipose tissue mass

## Answer &amp; Comments

Answer: 5- Reduces adipose tissue mass

Leptin is expressed by adipocytes and mediates effects via the hypothalamic centre which controls hunger and energy expenditure. It inhibits neuropeptide Y (which is a potent appetite stimulator), increases oxygen consumption, body temperature and reduces adipose tissue mass.



[ Q: 1428 ] MRCPass - Basic Science

A 65 year old man has a parietal lobe infarct.

Which one of the following is a likely manifestation?

- 1- Finger agnosia
- 2- Homonymous hemianopia
- 3- Bitemporal hemianopia
- 4- Expressive dysphasia
- 5- Dysidiadochokinesis



## Answer &amp; Comments

Answer: 1- Finger agnosia

Parietal lobe signs are:

- loss of two point discrimination
- agraphia
- finger agnosia
- astereognosis
- dyslexia
- Gerstmann syndrome
- receptive dysphasia
- dressing and constructional dyspraxia

Gerstmann syndrome includes four features (acalculia, agraphia, finger agnosia, left right disorientation), and is due to a lesion in the dominant hemisphere.



Testing for Finger Agnosia (inability to discriminate different fingers)



[ Q: 1429 ] MRCPass - Basic Science

An 18 year old ballet dancer presents to A&E unwell. She has poor dentition.

Her arterial pH is 7.44 and she has a pCO<sub>2</sub> of 6 kPa and pO<sub>2</sub> of 10kPa. Her chloride is 85 (95-107) mmol/l, HCO<sub>3</sub> is 30 (20-28) mmol/l.

*Which of the following describes her acid base balance?*

- 1- Respiratory acidosis with metabolic compensation
- 2- Respiratory alkalosis with metabolic compensation

- 3- Metabolic acidosis with respiratory compensation
- 4- Metabolic alkalosis with respiratory compensation
- 5- Normal anion gap metabolic acidosis

## Answer &amp; Comments

Answer: 4- Metabolic alkalosis with respiratory compensation

This patient is bulimic and has lost HCl from excessive vomiting. She has metabolic alkalosis which is compensated by hypoventilation (hence low pO<sub>2</sub> and high CO<sub>2</sub>).



[ Q: 1430 ] MRCPass - Basic Science

*Which one of following biochemical abnormalities would be most commonly seen in a diagnosis of Bartter's syndrome?*

- 1- Hypochloraemia
- 2- Hyperkalemia
- 3- Hyponatraemia
- 4- Hypokalemia
- 5- Acidosis

## Answer &amp; Comments

Answer: 4- Hypokalemia

Bartter's syndrome is characterised by:

hypokalaemic alkalosis, elevated renin and aldosterone levels



[ Q: 1431 ] MRCPass - Basic Science

A man who has common variable immunodeficiency comes to see the doctor in the genetics clinic with his girlfriend. They would like to start a family.

*What is the probability that his children will inherit his disease?*

- 1- <10%



- 2- 25%
- 3- 50%
- 4- 75%
- 5- 100%

### Answer & Comments

Answer: 1- <10%

Common Variable Immunodeficiency (CVID) is a disorder characterized by low levels of serum immunoglobulins and an increased susceptibility to infections. A clear mode of inheritance is not defined (there are multiple modes) and hence there is a <10 % chance of passing on the disease.



[ Q: 1432 ] MRCPass - Basic Science

Transcription RNA (tRNA) has three bases specific to a particular amino acid, which it binds to messenger RNA (mRNA).

*This specific area of tRNA known as:*

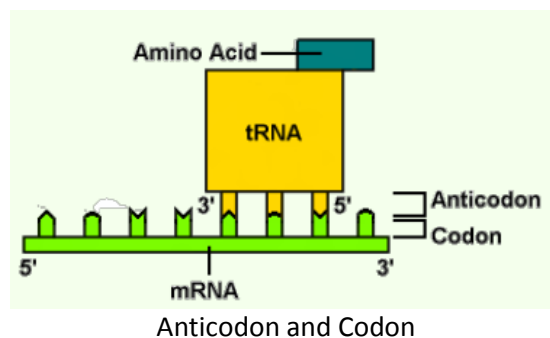
- 1- Codon
- 2- Intron
- 3- Anticodon
- 4- Transposon
- 5- Exon

### Answer & Comments

Answer: 3- Anticodon

Transfer RNA (tRNA) is a small RNA chain (74-93 nucleotides) that transfers a specific amino acid to a growing polypeptide chain at the ribosomal site of protein synthesis during translation. It has sites for amino-acid attachment and codon (a particular sequence of 3 bases) recognition. The codon recognition is different for each tRNA and is determined by the anticodon region, which contains the complementary bases to the ones encountered on the mRNA. Each tRNA molecule binds only one type of amino acid, but because the genetic code is degenerate,

more than one codon exists for each amino acid.



[ Q: 1433 ] MRCPass - Basic Science

*Which one of these organelles have DNA which can self replicate?*

- 1- Golgi apparatus
- 2- Nuclear membrane
- 3- Mitochondria
- 4- Peroxisomes
- 5- Transcription factors

### Answer & Comments

Answer: 3- Mitochondria

Only mitochondria have self replicating DNA



[ Q: 1434 ] MRCPass - Basic Science

A 25 year old woman was referred for investigation of iron deficiency anaemia. Her mother died aged 35 years from colonic carcinoma and had Peutz Jegher syndrome.

*Which is the likely mode of inheritance of Peutz Jeghers syndrome?*

- 1- Autosomal dominant
- 2- Autosomal recessive
- 3- X linked dominant
- 4- X linked recessive
- 5- Mitochondrial

### Answer & Comments

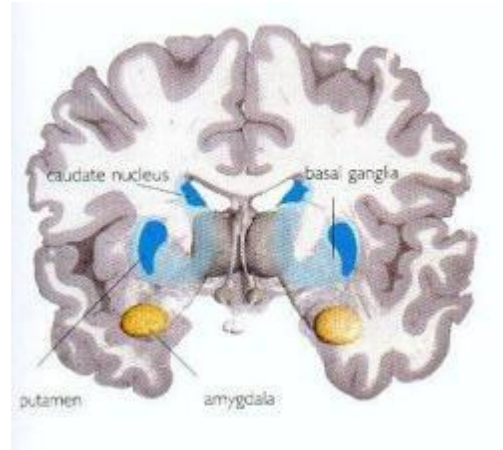
Answer: 1- Autosomal dominant

Peutz Jegher syndrome is an autosomal dominant condition associated with pigmentation, mainly, of the lips, buccal mucosa, genitalia, hands and feet.

In addition, there are multiple hamartogenous polyps of the gastrointestinal tract - most often in the small bow el but may occur affect any portion of the GI tract. The polyps themselves have a very low malignant potential. About 10-20% of patients develop gastrointestinal carcinoma, but there is also increased risk of pancreatic, lung and breast carcinoma.



Mucosal Pigmentation in Peutz Jegher Syndrome



Caudate nucleus / lobe



[ Q: 1436 ] MRCPass - Basic Science

*At sympathetic nerve endings what happens to the majority of amount of noradrenaline following depolarisation?*

- 1- Reuptake by the nerve terminal ending
- 2- Breakdown by monoamine oxidase
- 3- Conversion to adrenaline
- 4- Stays at the nerve junction
- 5- Recycled by catechol-O methyl transferase

#### Answer & Comments

Answer: 1- Reuptake by the nerve terminal ending

Most noradrenaline is taken up back into neurosecretory granules. MAO and COMT metabolise NA in small amounts.



[ Q: 1437 ] MRCPass - Basic Science

A 62 year old man with epigastric pains and weight loss is suspected of having pancreatic carcinoma.

*Which one of the following markers is useful?*

- 1- Alpha feto protein
- 2- CA 19.9
- 3- CA 125
- 4- Prostate specific antigen
- 5- Carcinoembryonic antigen



[ Q: 1435 ] MRCPass - Basic Science

*The main histological abnormality in Huntington's disease is seen in the:*

- 1- Caudate lobe
- 2- Midbrain
- 3- Red nucleus
- 4- Inferior colliculus
- 5- Hippocampus

#### Answer & Comments

Answer: 1- Caudate lobe

The main histological abnormality in Huntington's chorea is seen in the caudate lobe and putamen where there is extensive neuronal loss.

## Answer &amp; Comments

**Answer:** 2- CA 19.9

CA 19.9 is found in 70-90% of patients with pancreatic carcinoma. CA125 and CEA may also be positive but are less frequently so.



[ Q: 1438 ] MRCPass - Basic Science

*The RET Proto-oncogene is associated with which one of the following?*

- 1- Insulinoma
- 2- Anaplastic thyroid carcinoma
- 3- Bronchial carcinoma
- 4- Medullary thyroid carcinoma
- 5- Pituitary tumour

## Answer &amp; Comments

**Answer:** 4- Medullary thyroid carcinoma

The RET proto-oncogene is associated with multiple endocrine neoplasia MEN2A, MEN2B and medullary thyroid carcinoma 1, Hirschsprung disease.



[ Q: 1439 ] MRCPass - Basic Science

A young man presents with fevers and has several blood tests.

*Which one of the following, if increased, suggests infection?*

- 1- Albumin
- 2- Transferrin
- 3- Ferritin
- 4- Alpha 2-macroglobulin
- 5- Leptin

## Answer &amp; Comments

**Answer:** 3- Ferritin

Ferritin is well known as an acute phase protein which is increased in sepsis.



[ Q: 1440 ] MRCPass - Basic Science

A 62 year male presents with bilateral neuropathic leg pains. There was relevant past history of excess alcohol use. He is currently on oral thiamine and omeprazole. On examination, both knee reflexes are reduced and there is reduced sensation to fine touch in both feet.

*What is the next best investigation to confirm the diagnosis?*

- 1- EMG
- 2- Chest X ray
- 3- CT head
- 4- CT spine
- 5- Blood sugar

## Answer &amp; Comments

**Answer:** 5- Blood sugar

The clinical features are consistent with a diagnosis of peripheral neuropathy and although he has another possible cause due to alcohol, diabetes needs to be excluded.



[ Q: 1441 ] MRCPass - Basic Science

A 65 year old Mediterranean man who has leg cramps is started on quinine. He presents 10 days later, with a history of darkened urine, increasing breathlessness, back pains and fatigue. Investigations show a haemoglobin of 6.5 g/dl and raised reticulocyte count.

*Which of the following best explains this drug reaction?*

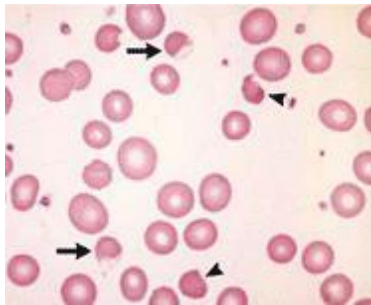
- 1- Hereditary spherocytosis
- 2- Hereditary elliptocytosis
- 3- Autoimmune haemolytic anaemia
- 4- Pyruvate kinase deficiency
- 5- Glucose 6 phosphate dehydrogenase deficiency

## Answer &amp; Comments

**Answer:** 5- Glucose 6 phosphate dehydrogenase deficiency

Glucose 6 phosphate dehydrogenase deficiency (X linked recessive) is seen in African, Mediterranean, Iraqi, Jew and South East Asian Chinese people.

It predisposes to a haemolytic anaemia reaction to drugs and infection. Implicated drugs include aspirin, sulphonamides, antimalarials and quinidine.



Blood film showing haemolysis in G6PD deficiency



## [ Q: 1442 ] MRCPass - Basic Science

A 40 year old female presents with a movement disorder. There is a family history of Huntington's chorea and the family is worried that she may be developing this condition.

**What is its inheritance?**

- 1- Autosomal recessive
- 2- Autosomal dominant
- 3- Mitochondrial inheritance
- 4- X linked recessive
- 5- X linked dominant

## Answer &amp; Comments

**Answer:** 2- Autosomal dominant

Huntington's chorea is inherited as an autosomal dominant trait.



## [ Q: 1443 ] MRCPass - Basic Science

A 60 year old man has numbness and tingling of the upper outer part of the left thigh. On examination, there is sensory impairment over the anterolateral aspect of the thigh.

**Where is the lesion?**

- 1- Sacral nerve
- 2- Lateral cutaneous nerve of thigh
- 3- Pudendal nerve
- 4- Femoral nerve
- 5- Sciatic nerve

## Answer &amp; Comments

**Answer:** 2- Lateral cutaneous nerve of thigh

The diagnosis is meralgia paraesthetica, an entrapment neuropathy of the lateral cutaneous nerve of the thigh as it passes under the inguinal ligament. Obesity is a risk factor for the condition.



## [ Q: 1444 ] MRCPass - Basic Science

*Which of the following haematological disorders is inherited as an autosomal recessive condition?*

- 1- Acute intermittent porphyria
- 2- Antithrombin III deficiency
- 3- Pyruvate kinase deficiency
- 4- Glucose 6 phosphate dehydrogenase deficiency
- 5- Protein C deficiency

#### Answer & Comments

**Answer:** 3- Pyruvate kinase deficiency

Pyruvate kinase deficiency is a rare congenital haemolytic anaemia inherited as an autosomal recessive manner.

The other condition's inheritance are:

- Acute intermittent porphyria - autosomal dominant
- Antithrombin 3 (AT3) - autosomal dominant
- Glucose 6 phosphate dehydrogenase deficiency - X linked recessive
- Protein C deficiency - autosomal dominant



[ Q: 1445 ] MRCPass - Basic Science

A 22 year old lady has had several episodes w heezing with associated flushing of the face, lips and hand swelling over the past few years.

*What investigation should be done?*

- 1- C1 esterase inhibitor level
- 2- Skin patch test with latex
- 3- Skin prick test with latex
- 4- Serum ANCA
- 5- Rheumatoid factor

#### Answer & Comments

**Answer:** 1- C1 esterase inhibitor level

Hereditary angioneurotic oedema is an autosomal dominantly inherited condition caused by a deficiency of C1 esterase inhibitor. The main clinical feature is the intermittent oedema in the skin around the face, hands, feet, larynx and gastrointestinal tract. Laryngeal oedema may cause wheezing. The C2 and C4 level are low in between attacks and C3 is normal. There are 2 varieties of the disorder. Type I is most common and results from an abnormally low level of normal C1-INH. Type II results from normal or abnormally elevated levels of a dysfunctional C1-INH. In both types of the disease, initial proteolytic components of the complement cascade (eg, C1r, C1s) go relatively unopposed and lead to the characteristic presentation and laboratory abnormalities (eg, low levels of C2 and C4).



Swollen lip in hereditary angioedema



[ Q: 1446 ] MRCPass - Basic Science

A 32 year old lady is admitted with a history of epistaxis. Investigations reveal iron deficiency anaemia. On examination, multiple telangiectasia are noted around her lips and in her mouth.

*What is the mode of inheritance for the condition?*

- 1- Polygenic inheritance
- 2- Autosomal recessive



- 3- Autosomal dominant
- 4- Autosomal dominant X-linked recessive
- 5- X-linked dominant

#### Answer & Comments

**Answer:** 3- Autosomal dominant

The patient has the features of hereditary haemorrhagic telangiectasia (Osler-Rendu-Weber syndrome) which has autosomal dominant inheritance.



Hereditary haemorrhagic telangiectasia



[ Q: 1447 ] MRCPass - Basic Science

*Which of the following statements describes this karyotype 46 XX, t (4;8)(q26;p21.3)?*

- 1- Transversion between the long arm of chromosome 4 (q) and the short arm of chromosome 8 (p)
- 2- Transversion between the short arm of chromosome 4 (q) and the short arm of chromosome 8 (p)
- 3- Transversion between the long arm of chromosome 4 (p) and the short arm of chromosome 8 (q)
- 4- Translocation between the short arm of chromosome 4 (q) and the long arm of chromosome 8 (p)
- 5- Translocation between the long arm of chromosome 4 (q) and the short arm of chromosome 8 (p)

#### Answer & Comments

**Answer:** 5- Translocation between the long arm of chromosome 4 (q) and the short arm of chromosome 8 (p)

The karyotype 46 XX, t (4;8)(q26;p21.3) describes a female with a normal number of chromosomes but a translocation between the long arm of chromosome 4 (q) and the short arm of chromosome 8 (p).



[ Q: 1448 ] MRCPass - Basic Science

A 28 year lady presents multiple café au lait spots. A diagnosis of neurofibromatosis type 1 made.

*Which of the following is true regarding the NF1 gene's inheritance and location?*

- 1- Inherited in an autosomal recessive fashion
- 2- Inherited in an X linked fashion
- 3- Found on chromosome 17
- 4- Found in the mitochondrial genome
- 5- Is identical to the NF2 gene

#### Answer & Comments

**Answer:** 3- Found on chromosome 17

Neurofibromatosis can be due to a defect of either the NF1 or NF2 gene.

The NF1 gene is found on chromosome 17 inherited in an autosomal dominant fashion.

The NF2 gene is found on Chromosome 22.



[ Q: 1449 ] MRCPass - Basic Science

Regarding two loci A and B, which are in linkage disequilibrium, *which one of the following statements is true?*

- 1- The inheritance of an allele at A will almost certainly exclude the inheritance of one of the alleles at B
- 2- The degree of linkage disequilibrium can be highly variable
- 3- The four alleles at A and B are inherited independently provided that the population is of sufficient size
- 4- The loci A and B are not linked



- 5- It is a random association of alleles in a breeding population

### Answer & Comments

**Answer:** 2- The degree of linkage disequilibrium can be highly variable

Linkage disequilibrium is a non-random association of alleles in a breeding population. The loci A and B are likely to be linked. Hence inheritance of an allele A usually occurs with the inheritance of allele B (rather than excluded). The inheritance is still dependent despite population size. Linkage disequilibrium almost always occurs between alleles at genetic loci that are closely linked in the genome. The degree of linkage equilibrium can however, be highly variable.



[ Q: 1450 ] MRCPass - Basic Science

McArdle's disease is a genetic defect in the phosphorylase enzyme, which affects the breakdown of glycogen.

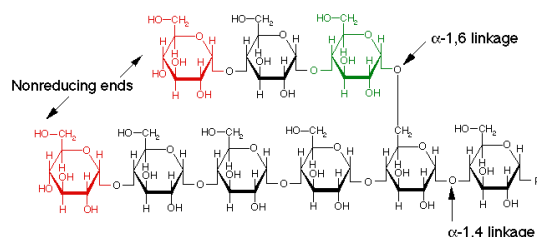
**What is glycogen made up of?**

- 1- Chains of glucose residues
- 2- Chains of fructose residues
- 3- Chains of sucrose residues
- 4- Chains of galactose residues
- 5- Chains of alternating galactose and glucose residues

### Answer & Comments

**Answer:** 1- Chains of glucose residues

The structure of glycogen consists of long polymer chains of glucose units connected by an alpha acetal linkage. Chains of glucose residues are linked in glycogen by alpha 1,4-glycosidic bonds (i.e. between the first carbon atom C1 of one glucose and the fourth carbon atom C4 of the next).



Glycogen - polymer of glucose molecules



[ Q: 1451 ] MRCPass - Basic Science

A patient with Angelman's syndrome expresses genomic imprinting.

**What does this mean?**

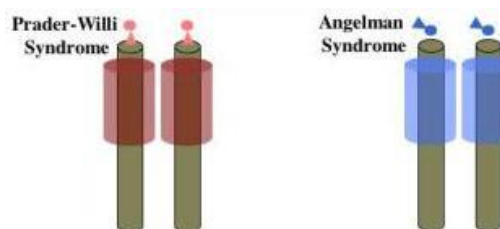
- 1- That two genes are inherited together
- 2- That a gene is mitochondrially inherited
- 3- The severity of a disease worsens from generation to generation
- 4- That one allele of a gene is not expressed
- 5- The differential expression of alleles is dependent on their parental origin

### Answer & Comments

**Answer:** 5- The differential expression of alleles is dependent on their parental origin

Genomic imprinting is the term used to refer to the differential expression of alleles dependent on their parental origin.

An example is when the same gene having different phenotypic expression is due to either maternal inheritance (e.g. Prader-Willi syndrome) or due to paternal inheritance (e.g. Angelman's syndrome).



Genomic Imprinting - the same gene has different phenotypic expression depending on whether it is maternally or paternally inherited



[ Q: 1452 ] MRCPass - Basic Science

A 25 year old patient with acquired Factor VIII deficiency was given a monoclonal antibody drug following an episode of severe bleeding.

*Which one of these is the likely drug?*

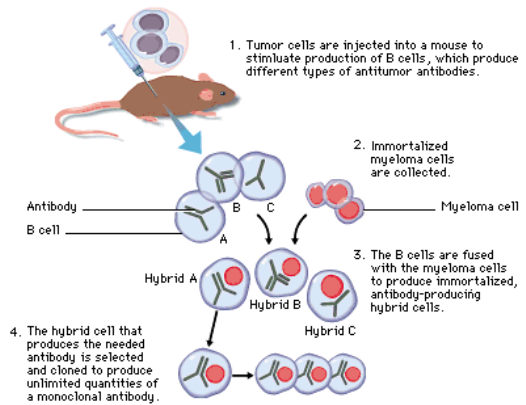
- 1- Prednisolone
- 2- Cyclosporin
- 3- Enoxaparin
- 4- Rituximab
- 5- Cyclophosphamide

#### Answer & Comments

**Answer:** 4- Rituximab

Rituximab is a chimeric, human IgG1 monoclonal antibody specific for the CD20 antigen expressed on the surface of B lymphocytes. The antibody is known to induce rapid in vivo depletion of both normal B lymphocytes and lymphoma B cells. The drug's limited toxicity has led to the recent use of rituximab for the treatment of autoimmune disorders, anticipating a decrease in antibody production by CD20+ B cells. Examples include ITP, autoimmune hemolytic anaemia, and acquired hemophilia A (factor VIII deficiency).

Monoclonal antibodies are made by fusing a mouse B cell with myeloma cell line. Antibodies can be purified and cell lines are grown in vitro. The antibodies can be used to measure hormone levels with immunoassays.



#### Producing Monoclonal Antibodies



[ Q: 1453 ] MRCPass - Basic Science

A 55 year old carpenter has pain in his shoulder. On examination, there was pain during resistance of abduction.

*Which muscle is likely to be involved?*

- 1- Infraspinatus
- 2- Supraspinatus
- 3- Pectoralis major
- 4- Teres minor
- 5- Latissimus dorsi

#### Answer & Comments

**Answer:** 2- Supraspinatus

Supraspinatus tendonitis is also known as rotator cuff syndrome. Supraspinatus tendinitis typically affects patients between 40 and 60 years of age following prolonged or excessive use of the shoulder. Pain is usually more severe but of shorter duration in younger patients due to a more vigorous repair process. Pain is felt in the shoulder and over the deltoid muscle but there is no obvious outward sign of inflammation or swelling. There is pain on active or resisted abduction.



[ Q: 1454 ] MRCPass - Basic Science

A 25 year old man has the condition MELAS.

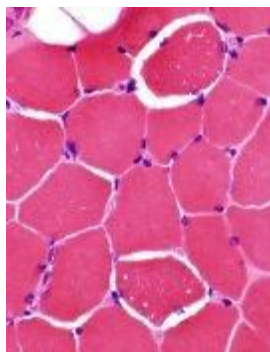
*Which one of the following is a feature of the disease?*

- 1- Cardiac arrhythmia
- 2- Colour blindness
- 3- Hirsutism
- 4- Lactic acidosis
- 5- Ketoacidosis

#### Answer & Comments

**Answer:** 4- Lactic acidosis

Mitochondrial disorders such as MELAS (Mitochondrial myopathy, encephalopathy, lactic acidosis, stroke) and MERRF have muscle, brain, nerve and pancreatic involvement. With pancreatic and muscle involvement, diabetes and lactic acidosis can occur, but ketoacidosis is infrequent.



Scattered abnormal, vacuolated fibers with clear rim in MELAS: H & E stain



[ Q: 1455 ] MRCPass - Basic Science

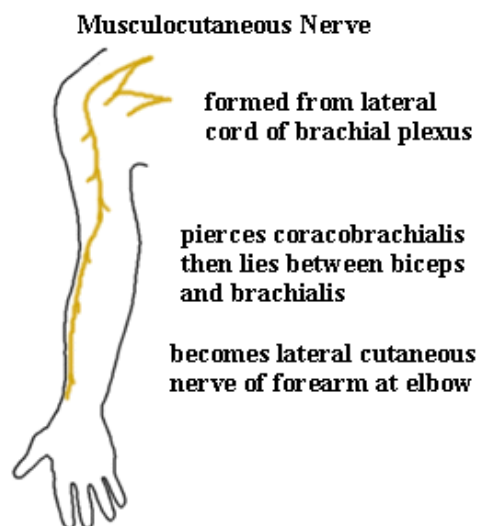
*Which nerve lesion causes weakness of biceps, coraco-brachialis and brachialis and sensory loss over the lateral aspect of the forearm?*

- 1- Radial nerve
- 2- Brachial nerve root
- 3- Axillary nerve
- 4- C5 and C6 root
- 5- Musculocutaneous nerve

#### Answer & Comments

**Answer:** 5- Musculocutaneous nerve

The musculocutaneous nerve supplies the biceps, coracobrachialis and brachialis muscles. It also supplies sensation over the lateral aspect of the forearm.



[ Q: 1456 ] MRCPass - Basic Science

A 35 year old male presents with oral and genital mucocutaneous ulcerations. He also has associated polyarthritis affecting the lower limbs. He is currently on an recent episode of pulmonary embolism.

*Which of the genetic association is common with such a presentation?*

- 1- HLA A3
- 2- HLA DR2
- 3- HLA DR3
- 4- HLA B27
- 5- HLA B5

#### Answer & Comments

**Answer:** 5- HLA B5

The features of genital and oral ulceration, as well as prothrombotic states are consistent with Behcet's disease. Familial occurrence has been reported and it seems to occur in

patients from eastern Mediterranean countries and Japan. The disease appears to be linked to HLA-B5, HLA -B51 and HLA-DR5 alleles.



Oral Ulceration in Behcet's Disease



[ Q: 1457 ] MRCPass - Basic Science

A 65 year old man was admitted with an exacerbation of chronic obstructive pulmonary disease.

His arterial blood gases on air showed pH 7.29,  $\text{paCO}_2$  8.5 kPa,  $\text{paO}_2$  8.0 kPa, and standard bicarbonate 30.5 mmol/l.

*What is the acid-base disturbance?*

- 1- Metabolic alkalosis
- 2- High anion gap metabolic acidosis
- 3- Normal anion gap metabolic acidosis
- 4- Respiratory alkalosis
- 5- Respiratory acidosis

#### Answer & Comments

**Answer:** 5- Respiratory acidosis

This patient had an acidosis with a high  $\text{PaCO}_2$  and normal standard bicarbonate--respiratory acidosis. This is a common finding in acute exacerbations of chronic obstructive pulmonary disease, especially with type II respiratory failure.



[ Q: 1458 ] MRCPass - Basic Science

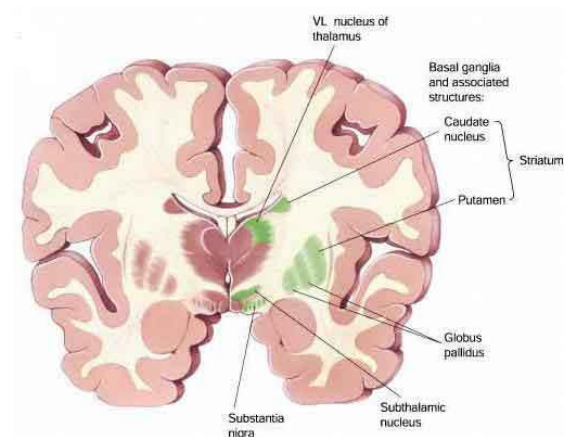
*Which of the following anatomical structures is likely to cause chorea, if damaged?*

- 1- Hippocampus
- 2- Subthalamic nucleus
- 3- Thalamus
- 4- Caudate nucleus
- 5- Substantia nigra

#### Answer & Comments

**Answer:** 4- Caudate nucleus

Damage to the caudate nucleus is most likely to cause chorea. This is involved in Huntington's chorea.



[ Q: 1459 ] MRCPass - Basic Science

A 60 year old woman has hyponatraemia. Following investigation, she was diagnosed as having SIADH.

*Which of the following is the most likely cause?*

- 1- Ramipril
- 2- Ibuprofen
- 3- Chlorpromazine
- 4- Alcohol
- 5- Atenolol

## Answer &amp; Comments

**Answer:** 3- Chlorpromazine

SIADH can be caused by many drugs (mnemonic starting with C) - carbamazepine, chlorpropamide, cyclophosphamide, chlorpromazine and clomipramine (i.e. neuroleptics and antidepressants including SSRIs). Alcohol decreases ADH release.



[ Q: 1460 ] MRCPass - Basic Science

A 40 year old diabetic patient overdosed on 30 tablets of an unknown medication.

She has blood gases showing a pH of 7.32,  $pO_2$  of 16 kPa and  $pCO_2$  of 3 kPa. Her  $HCO_3^-$  is 8 mmol/l and base excess is -5.

*What is the likely scenario?*

- 1- Metabolic acidosis with respiratory compensation
- 2- Metabolic alkalosis with respiratory compensation
- 3- Respiratory acidosis with metabolic compensation
- 4- Respiratory alkalosis with metabolic compensation
- 5- Normal anion gap metabolic acidosis

## Answer &amp; Comments

**Answer:** 1- Metabolic acidosis with respiratory compensation

The patient is likely to have overdosed on metformin and has metabolic acidosis. The pH is acidotic and she is hyperventilating for respiratory compensation of acid base balance, hence the low  $CO_2$  and high  $O_2$



[ Q: 1461 ] MRCPass - Basic Science

A 50 year old lady has pain in her right leg. On examination, there was weakness of her right ankle and absent right

ankle jerk. She also had sensory loss over the lateral aspect of her ankle.

*Which of these nerve lesions is likely?*

- 1- Deep peroneal nerve
- 2- Femoral nerve
- 3- Sciatic nerve
- 4- Lumbosacral plexus
- 5- Inferior gluteal nerve

## Answer &amp; Comments

**Answer:** 3- Sciatic nerve

The sciatic nerve branches into the tibial nerve and common peroneal nerve. Damage to these branches will cause almost total weakness around the ankle and absent ankle jerk.



[ Q: 1462 ] MRCPass - Basic Science

*Which form of nerve damage leads to complete inability to raise the arm at the shoulder with sensory loss over the deltoid ?*

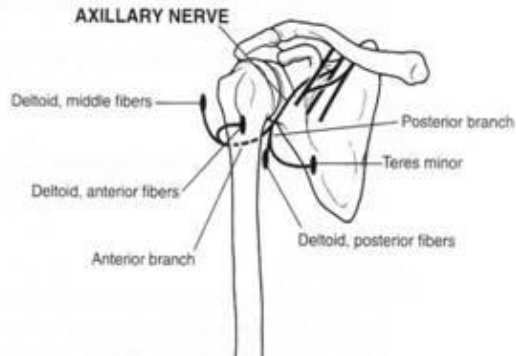
- 1- Lateral cutaneous nerve
- 2- Axillary nerve
- 3- Radial nerve in the axilla
- 4- Suprascapular nerve
- 5- C5 and C6 of the brachial nerve plexus



## Answer &amp; Comments

**Answer:** 2- Axillary nerve

The axillary nerve supplies the deltoid and teres minor as well as the skin over the deltoid.



[ Q: 1463 ] MRCPass - Basic Science

A 40 year old man presented 2 years ago with an inherited neurological disorder causing weakness. His father developed the disease in his 70s and his daughter was born 5 years ago with a severe form of the condition. His mother, sister, wife and son are unaffected.

*What is the likely mode of inheritance?*

- 1- Autosomal dominant
- 2- Autosomal recessive
- 3- X linked inheritance
- 4- Trinucleotide repeat disease
- 5- Mitochondrial inheritance

## Answer &amp; Comments

**Answer:** 4- Trinucleotide repeat disease

The inheritance showing increasing disease severity with earlier onset of disease in subsequent generations is called anticipation. This is typical of trinucleotide repeat disease where there is expansion of repetitive sequence of three nucleotides with each generation.

Typical examples are :

Huntington's disease, myotonic dystrophy, fragile X syndrome & Friedreich's ataxia.



[ Q: 1464 ] MRCPass - Basic Science

A 20 year old patient has been kicked in the shin during an aggressive football match. He is unable to evert his foot and dorsiflex his ankle.

*Which nerve is injured?*

- 1- Femoral nerve
- 2- Saphenous nerve
- 3- Gluteal nerve
- 4- Common peroneal nerve
- 5- Anterior tibial nerve

## Answer &amp; Comments

**Answer:** 4- Common peroneal nerve

The peroneal muscles around the lateral part of the shin help to dorsiflex the ankle, extend the toes and evert the foot. They are supplied by the common peroneal nerve. The common peroneal nerve is a branch of the sciatic nerve. The manner in which the common peroneal nerve snakes around the fibular head exposes it to injury.



[ Q: 1465 ] MRCPass - Basic Science

A 10 year old boy with blue sclerae and recurrent fractures has been diagnosed with Osteogenesis imperfecta.

*What abnormality predisposes to bone fragility?*

- 1- Metalloproteinase
- 2- Type 1 collagen
- 3- Fibronectin
- 4- Laminin
- 5- Elastin



## Answer &amp; Comments

**Answer:** 2- Type 1 collagen

Osteogenesis imperfecta (OI) is a condition resulting from abnormality in the type I collagen, which most commonly manifests as fragility of bones.



[ Q: 1466 ] MRCPass - Basic Science

A 65 year old man has familial hypercholesterolaemia.

*Which one of the following is a characteristic feature of the condition?*

- 1- Palmar xanthomas
- 2- Autosomal recessive inheritance
- 3- Reduced expression of LDL receptors
- 4- Hypertriglyceridaemia
- 5- Elevated chylomicrons

## Answer &amp; Comments

**Answer:** 3- Reduced expression of LDL receptors

The characteristics of familial hypercholesterolaemia are:

- autosomal dominant condition
- increased LDL concentrations
- reduced HDL concentrations
- reduced numbers of LDL receptor
- cardiovascular disease
- tendon xanthomas



[ Q: 1467 ] MRCPass - Basic Science

A 65 year old man has a right sided homonymous hemianopia and right sided upper and lower limb weakness. His reflexes are brisk on the right side. There is no sensory abnormalities.

*Which of the following area could be infarcted?*

- 1- Left temporal
- 2- Left parietal
- 3- Left cingulate gyrus
- 4- Right medial thalamus
- 5- Left frontal lobe

## Answer &amp; Comments

**Answer:** 2- Left parietal

The cingulate gyrus forms part of the limbic system, which is associated with mood and emotions. Frontal lobe lesions are not usually associated with homonymous hemianopia



[ Q: 1468 ] MRCPass - Basic Science

A 50 year old woman has right sided weakness, headache and vomiting. On examination she has a hemiplegia affecting the right face, arm and leg. She also has unilateral internuclear ophthalmoplegia with failure of adduction to the left and nystagmus to the left. Fundoscopy reveals papilloedema.

*In this patient, the papilloedema is due to obstruction at:*

- 1- The foramen of Monro
- 2- The foramen of Morgagni
- 3- The foramen of Magendie
- 4- The aqueduct of Sylvius
- 5- The foramen of Luschka

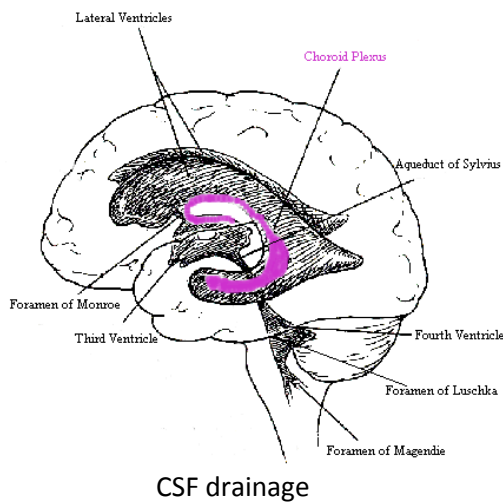
## Answer &amp; Comments

**Answer:** 4- The aqueduct of Sylvius

The aqueduct of the midbrain (the aqueduct of Sylvius) runs in the tegmentum of the midbrain and joins the third and fourth ventricles. Compression of the aqueduct can result in obstructive hydrocephalus and papilloedema.

Headache and vomiting can occur because of raised intracranial pressure. Malignant or benign intracranial tumors, colloidal cysts,

arachnoid cysts, and neurocysticercosis can also cause compression and need to be ruled out.



[ Q: 1469 ] MRCPass - Basic Science

A 75 year old man has a posterior cerebral artery territory infarct.

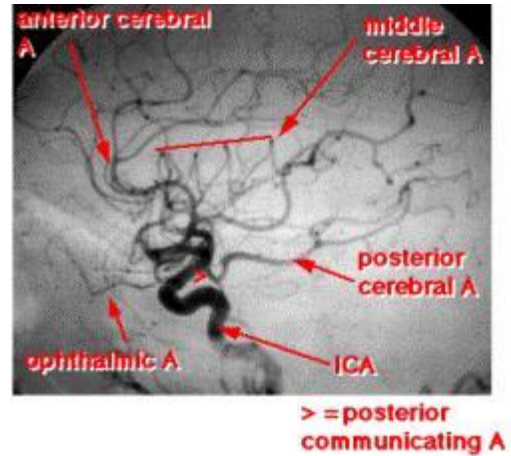
*Which one of the following is likely to occur?*

- 1- Bitemporal hemianopia
- 2- Expressive dysphasia
- 3- Receptive dysphasia
- 4- Colour blindness
- 5- Cortical blindness

#### Answer & Comments

**Answer:** 5- Cortical blindness

The posterior cerebral artery supplies the occipital lobe and the inferior portion of temporal lobe. Homonymous hemianopia, cortical blindness, verbal dyslexia and hemivisual neglect can occur.



Posterior Cerebral Artery



[ Q: 1470 ] MRCPass - Basic Science

A 30 year old lady has palpitations and is subsequently confirmed to have thyrotoxicosis due to Grave's disease.

*Which of the following statements is true?*

- 1- Grave's disease is associated with muscular dystrophy
- 2- Propylthiouracil is preferred over carbimazole in pregnancy
- 3- Radioactive iodine always improves Grave's disease
- 4- Smoking history is irrelevant
- 5- Steroid eye drops are typically used to treat Grave's eye disease

#### Answer & Comments

**Answer:** 2- Propylthiouracil is preferred over carbimazole in pregnancy

Grave's disease is associated with other autoimmune conditions e.g. myasthenia gravis.

Propylthiouracil is preferred to Carbimazole in pregnancy because carbimazole crosses the placenta and can cause nail/finger abnormalities (aplasia cutis) in the baby.

Radioactive iodine can worsen Grave's disease. Smoking is a risk factor for Grave's disease.

High dose oral or iv steroids are required in Grave's eye disease.



[ Q: 1471 ] MRCPass - Basic Science

*Which one of the following conditions has autosomal dominant inheritance?*

- 1- Oculocutaneous albinism
- 2- Betathalassaemia
- 3- Marfan's syndrome
- 4- Wilson's disease
- 5- Xeroderma Pigmentosa

#### Answer & Comments

Answer: 3- Marfan's syndrome

Marfan's syndrome inheritance is autosomal dominant. The rest of the conditions are autosomal recessive.

The list of autosomal recessive conditions are:

- oculocutaneous albinism
- alkaptonuria
- Bartter's syndrome
- cystic fibrosis
- endemic goitrous cretinism
- galactosaemia
- Gaucher's disease
- glycogen storage disease
- phenylketonuria
- Wilson's disease
- xeroderma pigmentosa



[ Q: 1472 ] MRCPass - Basic Science

Activation of the complement components is associated with potent biological functions to counteract infections.

*Which of the following activates rather than inhibits the complement pathway?*

- 1- DAF
- 2- CR1
- 3- C3b
- 4- Factor I
- 5- MCP

#### Answer & Comments

Answer: 3- C3b

C3b is an active fragment of C3, and can activate the alternative pathway. DAF, CR1, Factor I and MCP are complement pathway inhibitors.



[ Q: 1473 ] MRCPass - Basic Science

The thymus gland contains 3 major cell populations-epithelial, hemopoietic, and accessory cells.

*Which of the following cells develop in the thymus?*

- 1- Macrophages
- 2- T cells
- 3- Erythrocytes
- 4- B cells
- 5- Hairy cells

#### Answer & Comments

Answer: 2- T cells

B cells are not only produced in the bone marrow but also mature there. However, the precursors of T cells leave the bone marrow and mature in the thymus.



[ Q: 1474 ] MRCPass - Basic Science

A 55 year old male has been a heavy smoker and has had previous exposure to silica dust. He presents to A&E with worsening longstanding breathlessness.

His arterial pH is 7.36.  $p\text{CO}_2$  of 7.7 kPa and  $p\text{O}_2$  of 7.7kPa. His  $\text{HCO}_3$  is 32 (20-28) mmol/l and Base excess is 2.

*Which is the accurate description of his acid base balance?*

- 1- Metabolic acidosis with respiratory compensation
- 2- Metabolic alkalosis with respiratory compensation
- 3- Respiratory acidosis with metabolic compensation
- 4- Respiratory alkalosis with metabolic compensation
- 5- Normal anion gap metabolic acidosis

#### Answer & Comments

**Answer:** 3- Respiratory acidosis with metabolic compensation

There is chronic type 2 respiratory failure causing respiratory acidosis because of the hypoxia and hypercapnia. This is compensated metabolically by  $\text{HCO}_3$  retention and pH is restored to within a normal range.



[ Q: 1475 ] MRCPass - Basic Science

*Which is the structure formed by the roots of the lumbar and sacral nerves?*

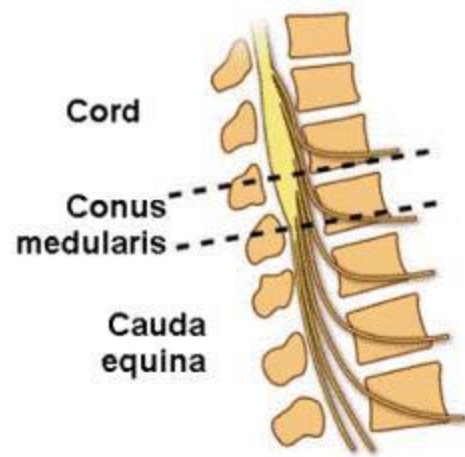
- 1- Falx cerebri
- 2- Amygdala
- 3- Cisterns
- 4- Medulla oblongata
- 5- Cauda equina

#### Answer & Comments

**Answer:** 5- Cauda equina

The cord is tapered at the lower end to form the conus medullaris.

The roots of the lumbar and sacral nerves are long and they form the cauda equina.



[ Q: 1476 ] MRCPass - Basic Science

A 40 year old woman has MELAS.

*Which of the following is correct regarding the risk of the grandsons and granddaughters having the disease?*

- 1- Son's children 100%, Daughter's children 100%
- 2- Son's children 0%, Daughter's children 100%
- 3- Son's children 50%, Daughter's children 100%
- 4- Son's daughters 100%, Son's sons 100%
- 5- Daughter's daughters 100%, Daughter's sons 0%

#### Answer & Comments

**Answer:** 2- Son's children 0%, Daughter's children 100%

Kearns Sayre's, MELAS, MERRF, progressive external ophthalmoplegia, Leber's optic atrophy are mitochondrially inherited diseases. The mitochondrial DNA is passed on only from the mother to all children.



[ Q: 1477 ] MRCPass - Basic Science

A 35 year old lady presents with wasting of the quadriceps and weakness of knee extension. There is loss of the knee jerk and sensory impairment over the front of the

thigh and over the subcutaneous surface of the tibia.

*The likely lesion is:*

- 1- Peroneal nerve
- 2- Brachial nerve
- 3- Obturator nerve
- 4- Femoral nerve
- 5- Sacral nerve

#### Answer & Comments

Answer: 4- Femoral nerve

The femoral nerve supplies the iliacus and pectineus, and the muscles on the anterior thigh. The nerve also provides cutaneous filaments to the front and inner side of the thigh and to the leg and foot (via saphenous nerve).



[ Q: 1478 ] MRCPass - Basic Science

*Which one of the following features is found in Neurofibromatosis Type 1 (NF1)?*

- 1- Webbed neck
- 2- Calcinosis
- 3- Lens dislocation
- 4- Lisch Nodules
- 5- Roths spots

#### Answer & Comments

Answer: 4- Lisch Nodules

Lisch nodules (pigmented spots) of the iris are present in more than 90% of patients with neurofibromatosis type 1. Bilateral acoustic neuromas are a hallmark feature of neurofibromatosis type 2.

The diagnosis is suggested by six or more café au lait spots. Although the condition is autosomal dominant, almost half of all cases are new mutations.



Lisch Nodules



[ Q: 1479 ] MRCPass - Basic Science

A 17 year old lady has small, raised lesions on her trunk and also has axillary freckles.

*What is the likely mode of inheritance of this condition?*

- 1- Autosomal dominant
- 2- Autosomal recessive
- 3- Trinucleotide repeats
- 4- X linked recessive
- 5- X linked dominant

#### Answer & Comments

Answer: 1- Autosomal dominant

The condition described is neurofibromatosis. Inheritance is autosomal dominant.

The gene defect for NF-1 is on chromosome 17, and for NF-2 is on chromosome 22.



Neurofibromas



[ Q: 1480 ] MRCPass - Basic Science



A 35 year old diabetic man has loss of sensation in the anterior and lateral part of the thigh.

*Which nerve is likely to be affected?*

- 1- Sciatic nerve
- 2- Lateral cutaneous nerve
- 3- Gluteal nerve
- 4- Pudendal nerve
- 5- Femoral nerve

#### Answer & Comments

Answer: 2- Lateral cutaneous nerve

Trauma around the inguinal ligament can lead to damage in the lateral cutaneous nerve supplying the anterolateral portion of the thigh. It is a purely sensory nerve which travels lateral to the psoas muscle.



Lateral Cutaenous Nerve (marked NCL)



[ Q: 1481 ] MRCPass - Basic Science

*Which of the following enzymes converts glucose to glucose-6-phosphate?*

- 1- Phosphofructokinase
- 2- Glucokinase
- 3- Hexokinase
- 4- Fructokinase
- 5- Glucose 6 phosphatase

#### Answer & Comments

Answer: 3- Hexokinase

Hexokinase catalyses the conversion of glucose to glucose-6-phosphate, using a phosphate group donated from ATP.



[ Q: 1482 ] MRCPass - Basic Science

*Which of the following is true regarding the role of restriction enzymes?*

- 1- Anneal DNA together
- 2- Synthesize DNA
- 3- Are involved in the cell cycle arrest
- 4- Cut DNA
- 5- Degrade DNA

#### Answer & Comments

Answer: 4- Cut DNA

Restriction enzymes cut DNA at nucleotide sequences specific to each restriction enzyme.

HindIII and EcoRI are examples of restriction enzymes. DNA ligase and polymerase are involved in joining and linking DNA together.

EcoRI as an example of a restriction enzyme



[ Q: 1483 ] MRCPass - Basic Science

*Respiratory distress syndrome can be associated with reduction of lung surfactant. Surfactant is produced in which cell in the lung?*

- 1- Alveoli white cells
- 2- Vessel endothelium



- 3- Type II pneumocyte
- 4- Small cell
- 5- Keratinocytes

### Answer & Comments

**Answer:** 3- Type II pneumocyte

Lung surfactant is produced by type II pneumocytes.



[ Q: 1484 ] MRCPass - Basic Science

A 22 year old cricket player presents with an injury to his right upper limb. On examination of the right upper limb there is incomplete and defective pronation. The wrist flexors are paralysed when examined against resistance.

When this is tested the tendon of flexor carpi ulnaris stands out and the hand becomes ulnar deviated. Flexion of the ulnar Two fingers is possible although it is weaker than normal. Abduction and opposition of the thumb is defective. There is sensory loss over the lateral three and a half digits of the hand and the lateral aspect of the palm.

*The injury is located at:*

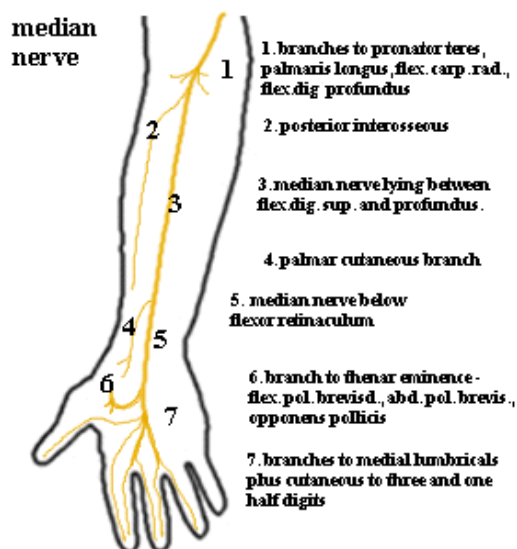
- 1- Ulnar nerve at the wrist
- 2- Ulnar nerve at the elbow
- 3- Brachial nerve
- 4- Musculocutaneous nerve
- 5- Median nerve at the elbow

### Answer & Comments

**Answer:** 5- Median nerve at the elbow

An injury to the median nerve at the elbow causes weakness of pronator teres, radial flexors of the wrist, the long finger flexors except the ulnar half of the deep flexors, most of the muscles of the thenar eminence and the Two radial lumbricals.

Sensory loss occurs over the lateral three and a half digits of the hand and the lateral aspect of the palm. There may also be vasomotor and trophic changes.



[ Q: 1485 ] MRCPass - Basic Science

*Which of the following is true regarding autosomal recessive inheritance involving parents and children?*

- 1- For parents with one affected child, the risk of having another affected child is 1 in 2
- 2- For parents with one affected child, the risk of having another affected child is 1 in 8
- 3- Unaffected siblings of an affected child have a 1 in 3 chance of being carriers
- 4- Unaffected siblings of an affected child have a 2 in 3 chance of being carriers
- 5- Unaffected siblings of an affected child are definite carriers

### Answer & Comments

**Answer:** 4- Unaffected siblings of an affected child have a 2 in 3 chance of being carriers

The best way to understand is to draw a family tree with the parents both being carriers of the recessive gene [Aa and Bb] and four possible inherited combinations [AB, Ab, aB and ab].

For parents with one affected child, the risk of having another affected child is 1 in 4.

Unaffected siblings have a 2 in 3 chance of being carriers because the last possibility of both recessive genes is eliminated (AxBx).



[ Q: 1486 ] MRCPass - Basic Science

*Which ONE of the following organelles have self replicating DNA?*

- 1- Endoplasmic Reticulum
- 2- Golgi apparatus
- 3- Peroxisome
- 4- Mitochondria
- 5- Lysosomes

#### Answer & Comments

Answer: 4- Mitochondria

Mitochondria have DNA, which can pass on inherited mitochondrial diseases (e.g. MELAS / MERRF ).



[ Q: 1487 ] MRCPass - Basic Science

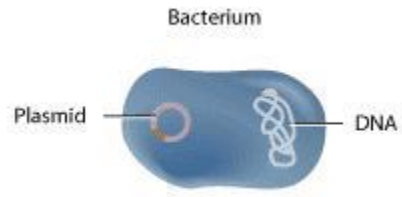
*A Plasmid best described as*

- 1- A recombinant section of DNA
- 2- Bacterial DNA separate from chromosome
- 3- Multiple origins of replication
- 4- Viral RNA
- 5- Consist of multiple copies of a single gene

#### Answer & Comments

Answer: 2- Bacterial DNA separate from chromosome

Plasmids are circular molecules of bacterial DNA separate from the bacterial chromosome. They are usually small, consisting of a few thousand base pairs. They carry one of a few genes and have a single origin of replication.



[ Q: 1488 ] MRCPass - Basic Science

A 30 year old man has Lipoprotein lipase deficiency.

*Which one of the following features is most likely?*

- 1- Marked hypercholesterolaemia
- 2- Reduced chylomicrons
- 3- Marked hypertriglyceridaemia
- 4- Familial Hypercholesterolaemia
- 5- Combined hyperlipidaemia

#### Answer & Comments

Answer: 3- Marked hypertriglyceridaemia

Mutations in the LPL gene cause familial lipoprotein lipase deficiency.

The breakdown of chylomicrons releases fat molecules for storage in fat (adipose) cells or for energy use.

Inheritance is autosomal recessive. The breakdown of chylomicrons releases triglyceride molecules for storage in adipose cells or for energy use. Mutations in the LPL gene prevent lipoprotein lipase from breaking down chylomicrons effectively, leading to high triglyceride levels in the plasma.



[ Q: 1489 ] MRCPass - Basic Science

*Which one of the following is true regarding mitochondrial DNA diseases?*

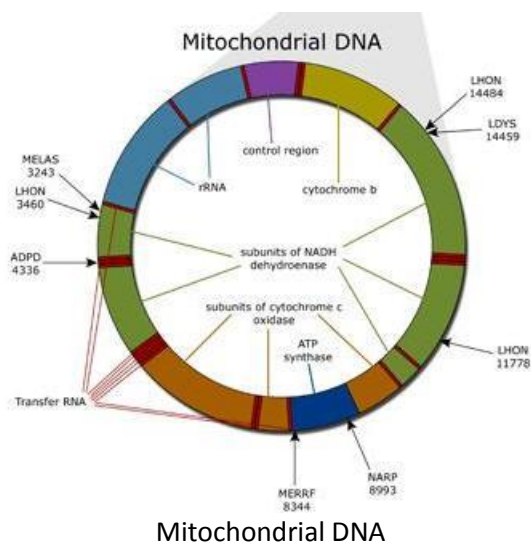
- 1- Mitochondrial DNA is inherited from the father
- 2- Mitochondrial DNA is composed of a circular loop of doublestranded DNA

- 3- Mitochondrial genome encodes for nuclear proteins
- 4- Mutations of mitochondrial DNA occurs in multiple sclerosis related optic atrophy
- 5- Simvastatin depletes muscle mitochondrial DNA

### Answer & Comments

**Answer:** 2- Mitochondrial DNA is composed of a circular loop of doublestranded DNA

Mitochondrial DNA is inherited from the mother. Mitochondrial DNA codes for proteins in the oxidative phosphorylation / electron transport chain. Leber's optic atrophy is a form of mitochondrial disease. AZT (zidovudine) is an example of a drug which does deplete muscle mitochondrial DNA.



[ Q: 1490 ] MRCPass - Basic Science

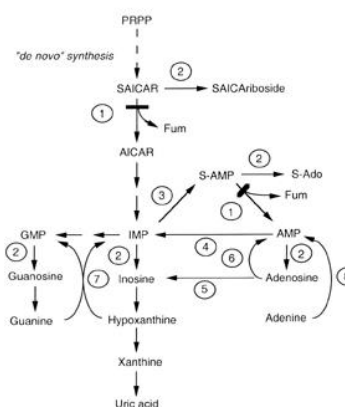
*Which of the following is degraded to uric acid?*

- 1- Uracil
- 2- Thymine
- 3- Cytosine
- 4- Guanine
- 5- Orotic acid

### Answer & Comments

**Answer:** 4- Guanine

The purine bases adenine and guanine are degraded to uric acid. Adenosine and Xanthine are also metabolised to uric acid. Uracil, thymine, cytosine and orotic acid are pyrimidine bases.



Purine Metabolism



[ Q: 1491 ] MRCPass - Basic Science

*Which one of the following features does trinucleotide repeat disorders exhibit?*

- 1- Anticipation
- 2- Linkage
- 3- Methylation
- 4- Reduction
- 5- Genomic imprinting

### Answer & Comments

**Answer:** 1- Anticipation

Trinucleotide repeat disorders typically worsen if there are expansion in the numbers of repeats. This is labeled anticipation. The repeats may be involved in coding sequences of proteins e.g. in Huntington's. Fragile X syndrome causes cognitive impairment.



[ Q: 1492 ] MRCPass - Basic Science

A 35 year old patient has a high

arched palate and aortic regurgitation. He has a tall stature, and upwards lens dislocation.

*Which gene abnormality does he have?*

- 1- Myosin
- 2- Actin
- 3- Fibrillin
- 4- Spectrin
- 5- Ankyrin

#### Answer & Comments

Answer: 3- Fibrillin

In Marfan's syndrome, a mutation in a gene causes a defect in the body's production of fibrillin, an important building block of connective tissue. In many families with inherited Marfan's syndrome, the mutation affects the FBN1 gene on chromosome 15.



[ Q: 1493 ] MRCPass - Basic Science

A 30 year old woman has recently delivered a baby. She complains of groin pains. On examination, she has weakness of adduction and internal rotation of the hip. There is sensory impairment over the medial aspect of the thigh.

*Which nerve is affected?*

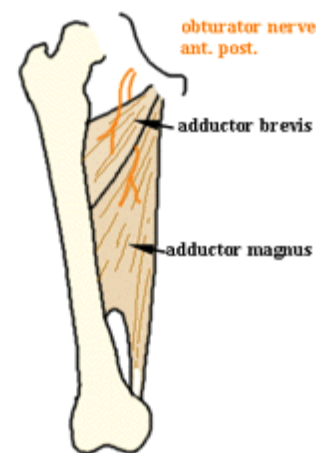
- 1- Femoral nerve

- 2- Sciatic nerve
- 3- Sacral nerve
- 4- Obturator nerve
- 5- Lateral cutaneous nerve of the thigh

#### Answer & Comments

Answer: 4- Obturator nerve

The obturator nerve supplies gracilis, the adductor (longus, brevis, magnus) and the skin over the medial aspect of the thigh.



[ Q: 1494 ] MRCPass - Basic Science

A study reveals an immediate rise in blood pressure following infusion of a hormone in a group of volunteers.

*Which of the following hormones is likely to have been used?*

- 1- Angiotensin I
- 2- Angiotensin II
- 3- Growth hormone
- 4- Atrial natriuretic peptide
- 5- Brain natriuretic peptide

#### Answer & Comments

Answer: 2- Angiotensin II

The final active messenger of the renin-angiotensin pathway is angiotensin II.

Angiotensin II binds to AT1 receptors to cause vasoconstriction and fluid retention, both of which lead to an increase in blood pressure. Angiotensin II receptor blockers lower blood pressure by blocking the AT1 receptors.



[ Q: 1495 ] MRCPass - Basic Science

A 36 year old man has gynaecomastia secondary to cirrhotic liver disease.

*What is likely to have caused the gynaecomastia?*

- 1- Reduced testosterone production
- 2- Increased testosterone metabolism
- 3- Increased oestrogen production
- 4- Reduced oestrogen metabolism
- 5- Increased LH levels

#### Answer & Comments

**Answer:** 4- Reduced oestrogen metabolism

Gynaecomastia in liver disease is due to an imbalance in androgen and oestrogen levels, the main contributor being reduced oestrogen metabolism.



[ Q: 1496 ] MRCPass - Basic Science

A 30 year old male presents has intermittent jaundice and anaemia. He is diagnosed with glucose 6 phosphate dehydrogenase (G6PD) deficiency. His wife has normal G6PD activity.

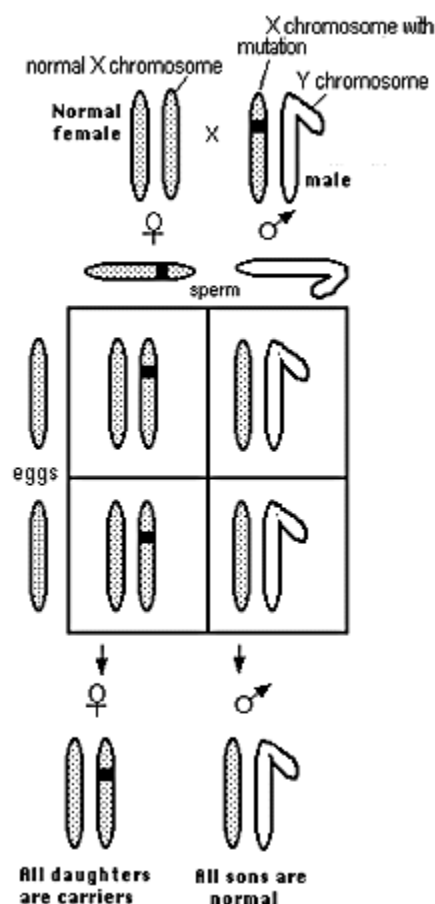
*What is the likelihood of their children developing the condition phenotypically?*

- 1- All their children will be affected
- 2- All their sons will be affected
- 3- All their daughters will be affected
- 4- 50% of their daughters will be affected
- 5- None of their children will be affected

#### Answer & Comments

**Answer:** 5- None of their children will be affected

Glucose 6 phosphate dehydrogenase (G6PD) deficiency has X linked inheritance. The affected patient has a chromosome XxY and wife is XX. Therefore all daughters will be carriers XxX and all sons normal XY. None of these patients will have phenotypical G6PD deficiency.



[ Q: 1497 ] MRCPass - Basic Science

A 40 year old man has G6PD deficiency.

*Which one of the following substances is likely to lead to red cell haemolysis?*

- 1- Chloroquine
- 2- Paracetamol
- 3- Trimethoprim

4- Erythromycin

5- Baked beans

**Answer & Comments**Answer: 1- Chloroquine

Oxidative stress can be caused by drugs such as chloroquine, quinine, primaquine and sulphonamide (sulfomethoxazole), nitrofurantoin, NSAIDs, dapsone and aspirin. Fava beans can also cause haemolysis.



[ Q: 1498 ] MRCPass - Basic Science

*Which one of the following cells secretes intrinsic factor?*

1- Pancreatic islet cells

2- Paneth cells

3- Gastric parietal cells

4- Hepatocytes

5- Myocytes

**Answer & Comments**Answer: 3- Gastric parietal cells

Intrinsic factor is secreted by the gastric parietal cells. It is a glycoprotein which binds to vitamin B<sub>12</sub> best in an acid environment. It then releases vitamin B<sub>12</sub> in the terminal ileum where proteases digest the binding proteins and vitamin B<sub>12</sub> is absorbed



[ Q: 1499 ] MRCPass - Basic Science

A 33 year old man has myotonic dystrophy.

*Which one of the following features is the disease likely to exhibit?*

1- Decreasing incidence with generations

2- Skips generations

3- Anticipation

4- Apoptosis

5- Mutation

**Answer & Comments**Answer: 3- Anticipation

Anticipation refers to increasing severity with subsequent generations. It is common in trinucleotide repeat disorders like Huntington's disease, myotonic dystrophy and fragile X syndrome, where triplet repeat mutations in DNA are implicated.

The mechanism behind the expansion of the triplet repeats is little understood. One theory is that the increasing number of repeats influence the overall shape of the DNA, which can have an effect on its interaction with DNA polymerase and thus the expression of the gene.



[ Q: 1500 ] MRCPass - Basic Science

A 46 year old woman complains of numbness in her left hand. On examination, there was loss of sensation over the thumb and first 2 fingers with paralysis of abductor pollicis and opponens pollicis.

*Which nerve is injured?*

1- Median

2- Ulnar

3- Radial

4- Posterior interosseous

5- Anterior interosseous

**Answer & Comments**Answer: 1- Median

The median nerve supplies the following small muscles in the hands:

o Abductor pollicis brevis

o Opponens pollicis

o ± Flexor pollicis brevis

o 1st &amp; 2nd lumbricals

The sensory supply is to palmar surface of thumb, 2nd, 3rd & lateral 1/2 of 4th finger





[ Q: 1501 ] MRCPass - Basic Science

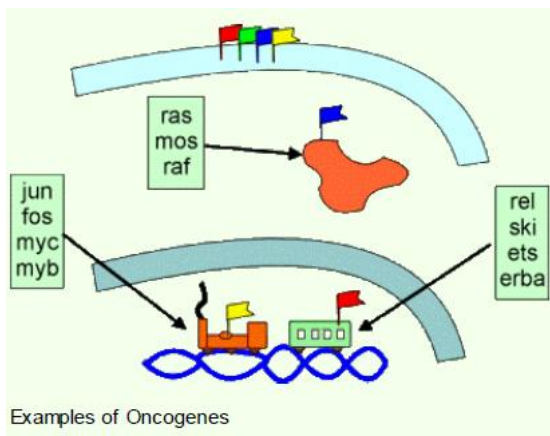
Which of the following is a tumour suppressor gene?

- 1- Ras
- 2- C-myc
- 3- N-myc
- 4- P53
- 5- Src

#### Answer & Comments

**Answer:** 4- P53

Mutated proto-oncogenes that cause cancer are called oncogenes. All of the above are oncogenes except for p53. Ras oncogene is involved in sporadic tumours (colon and lung) and rhabdomyosarcomas. c-myc translocation occurs in Burkitt's lymphoma. N-myc proto-oncogene is seen in neuroblastoma. SRC oncogene is associated with sarcoma. p53 is a tumour suppressor gene.



[ Q: 1502 ] MRCPass - Basic Science

A 18 year old man presents to casualty complaining of difficulty breathing. He had collapsed shortly after being stung on the leg by a wasp. On examination, his pressure was 80/40 mmHg, and there was significant facial swelling.

Which one of the following investigations is likely to confirm the nature of reaction?

- 1- Wasp toxin levels
- 2- Serum complement C3 level
- 3- Serum complement C4 level
- 4- Serum total IgE level
- 5- Plasma tryptase activity

#### Answer & Comments

**Answer:** 4- Serum total IgE level

This is a form of Type I hypersensitivity, also known as immediate anaphylactic hypersensitivity. It usually takes 15 to 30 minutes from the time of exposure to the antigen. The reaction involves production of IgE, in response certain antigens, which in turn initiates a sequence of events.



[ Q: 1503 ] MRCPass - Basic Science

Which one of the following conditions exhibit genomic imprinting?

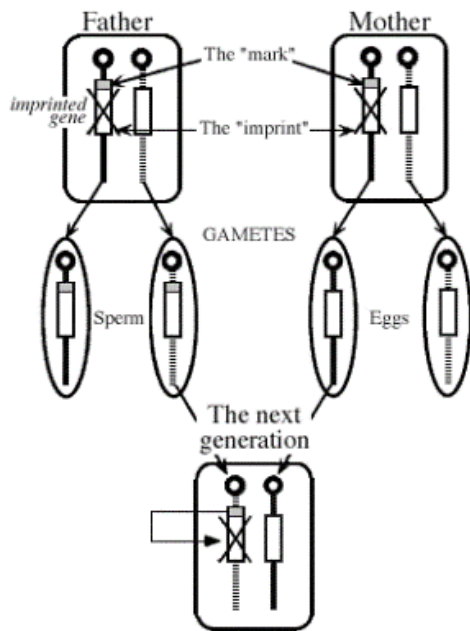
- 1- Abetalipoproteinaemia
- 2- Patau's syndrome
- 3- Prader Willi syndrome
- 4- Down's syndrome
- 5- Motor Neuron disease

#### Answer & Comments

**Answer:** 3- Prader Willi syndrome

Genomic imprinting is exhibited by the following conditions:

- Prader Willi syndrome
- Angelman syndrome
- Beckwith-Wiedemann syndrome



Genomic imprinting - Disease severity depends on whether it is paternally or maternally inherited.



[ Q: 1504 ] MRCPass - Basic Science

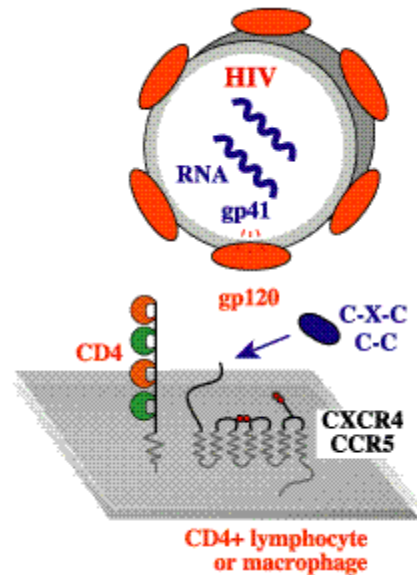
Which of these receptors helps as a receptor to allow HIV to enter activated T cells?

- 1- CD4
- 2- CD8
- 3- CXCR4
- 4- CCR4
- 5- CCR3

#### Answer & Comments

Answer: 3- CXCR4

CCR5 and CXCR4 are co-receptors which help HIV binding (gp120 to CD4 receptor) to activated T cells.



CD4

molecules are known to play a central role, but CXCR4 (fusin) and CCR5 are also involved, possibly by removing gp120 from the HIV particle, thus exposing gp41, which is necessary for the membrane attachment of HIV.



[ Q: 1505 ] MRCPass - Basic Science

A 40 year old man with pleurisy for five days was assessed. A moderately sized pneumothorax was seen in a chest radiograph.

His arterial blood gases on air showed pH 7.44,  $\text{PaCO}_2$  3.0 kPa,  $\text{PaO}_2$  30.5 kPa, standard bicarbonate 16 mmol/l.

How can the clinical picture be explained?

- 1- Respiratory acidosis
- 2- Compensated metabolic alkalosis
- 3- Compensated metabolic acidosis
- 4- Compensated respiratory alkalosis
- 5- Compensated respiratory acidosis

#### Answer & Comments

Answer: 4- Compensated respiratory alkalosis

This patient had a normal pH but had both a low  $\text{PaCO}_2$  and a low standard bicarbonate. The history indicates five days of

hyperventilation, so this is likely to be a compensated respiratory alkalosis.



[ Q: 1506 ] MRCPass - Basic Science

An 18 year old male with meningococcal meningitis has further investigations. It was found that he had low properdin levels measured by the ELISA test.

*How is this likely to have been inherited?*

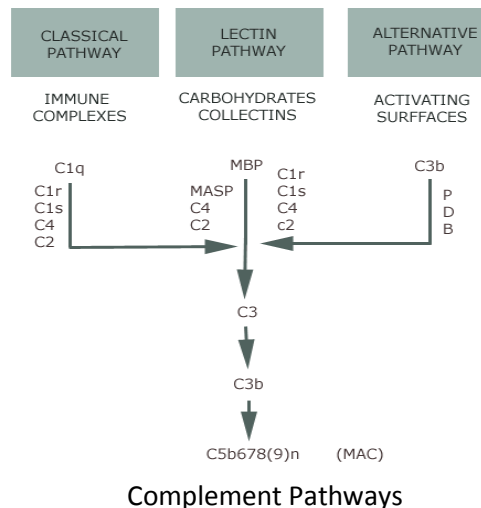
- 1- Autosomal dominant
- 2- Autosomal recessive
- 3- X linked recessive
- 4- X linked dominant
- 5- Mitochondrial inheritance

#### Answer & Comments

**Answer:** 3- X linked recessive

The pathways include the classic pathway (C1qrs, C2, C4) and the alternative pathway (C3, factor B, properdin). Properdin is a protein encoded on the X chromosome. Properdin stabilizes the C3 convertase (C3bBb) of the alternative pathway, involved in opsonisation. Meningococcal disease is a prominent manifestation in a significant fraction of reported cases in all clinical patterns of complement deficiency, particularly

those where opsonisation is defective. Properdin deficiency states are X-linked recessive, while other genetic defects within the complement system appear to be transmitted as autosomal recessive traits.



[ Q: 1507 ] MRCPass - Basic Science

*Northern blotting is a process which involves detection of which of the following?*

- 1- Immunoglobulins
- 2- Proteins
- 3- Viruses
- 4- RNA
- 5- DNA

#### Answer & Comments

**Answer:** 4- RNA

Northern blotting detects RNA, whilst Southern blotting detects DNA.



[ Q: 1508 ] MRCPass - Basic Science

A medical student reviews the physiology of the oxygen dissociation curve.

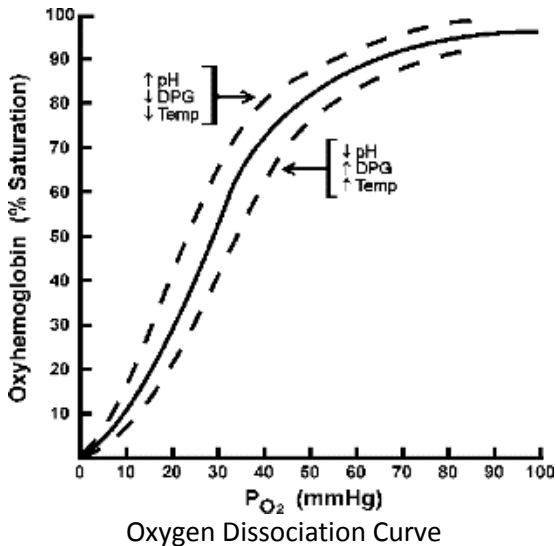
*Which one of the following is associated with increased affinity of Hb for oxygen?*

- 1- Chronic hypoxia
- 2- Anaemia
- 3- Increased 2,3 DPG
- 4- Cold temperature
- 5- Diabetic ketoacidosis

## Answer &amp; Comments

**Answer:** 4- Cold temperature

Acidosis, raised 2,3 DPG, raised temperature, hypoxia and anaemia all shift the O<sub>2</sub>-Hb dissociation curve to the right, leading to reduced affinity to O<sub>2</sub>.



[ Q: 1509 ] MRCPass - Basic Science

A patient with Crohn's disease and an ileostomy has the following results:

Na 134 (135-145 mmol/l)

K 3.1 (3.5-5 mmol/l)

Cl 112 (92-107 mmol/l)

Bicarbonate 12 (20-30 mmol/l)

Urea 13 (3.2-8.1 mmol/l)

Creatinine 120 (70-110 mmol/l)

pH 7.25 (7.35-7.45 kPa)

paCO<sub>2</sub> 3.1 (3.5-5 kPa)

*The diagnosis is likely to be:*

- 1- Normal anion gap metabolic acidosis
- 2- Metabolic alkalosis
- 3- Respiratory alkalosis
- 4- Respiratory acidosis
- 5- Hypochloraemic metabolic acidosis

## Answer &amp; Comments

**Answer:** 1- Normal anion gap metabolic acidosis

Anion gap = (Na + K) - (Cl + HCO<sub>3</sub>), [normal range 10-18 mmol/L]. In this case (134 + 3.2) - (112 + 12) = 13.1.

Low bicarbonate in the presence of acidosis suggests a metabolic cause, the probable cause in this case is gastrointestinal bicarbonate loss.



[ Q: 1510 ] MRCPass - Basic Science

A 40 year old patient has had EMGs done to investigate a cause of peripheral leg weakness.

*Which of the following features suggests axonal neuropathy?*

- 1- Latency
- 2- Reduced conduction velocity
- 3- Reduced muscle action potential amplitude
- 4- Decreased frequency of conduction signals
- 5- Conduction block

## Answer &amp; Comments

**Answer:** 3- Reduced muscle action potential amplitude

Reduced amplitude of action potential is seen in axonal neuropathy. Reduced conduction velocity or conduction block is seen in demyelination.



[ Q: 1511 ] MRCPass - Basic Science

*Which of the following are found in both eukaryotic AND prokaryotic cells?*

- 1- Linear DNA
- 2- Ribosomes
- 3- Chromosomes
- 4- Nuclear membrane
- 5- Introns

## Answer &amp; Comments

**Answer:** 2- Ribosomes

Eukaryotes (higher organisms) have multiple chromosomes in a genome which is separated from the rest of the cell by a nuclear membrane. Prokaryotes lack a membrane bound nucleus, their DNA occurs in a circular form. Transcription of eukaryotic genes requires noncoding sequences (introns) in the mRNA which is spliced out before translation at the ribosome. Both eukaryotes and prokaryotes have ribosomes.



[ Q: 1512 ] MRCPass - Basic Science

*Which of the following is characteristically inherited in an autosomal recessive manner?*

- 1- Adult polycystic kidney disease
- 2- C1 esterase inhibitor deficiency
- 3- Sickle cell disease
- 4- Achondroplasia
- 5- Familial hypercholesterolaemia

## Answer &amp; Comments

**Answer:** 3- Sickle cell disease

Sickle cell disease is inherited in an autosomal recessive manner (sickle cell trait is inherited in an autosomal dominant manner).

Achondroplasia, adult polycystic kidney disease, C1 esterase inhibitor deficiency (hereditary angioedema) and familial hypercholesterolaemia are usually inherited in an autosomal dominant manner.



[ Q: 1513 ] MRCPass - Basic Science

*Which one of the following statements describes genomic imprinting?*

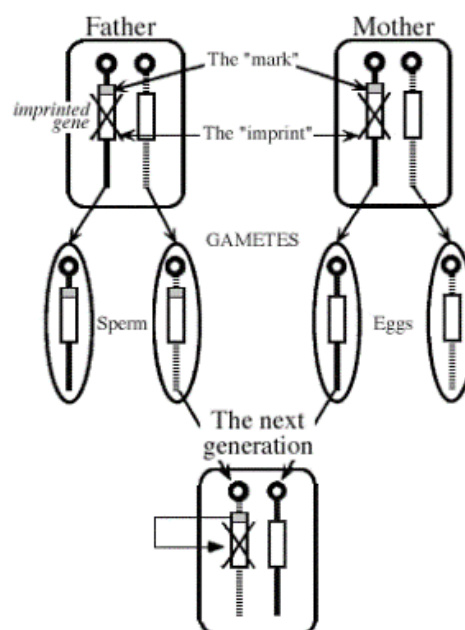
- 1- Expansion of repeats with time
- 2- Genotypic variability from maternal and paternal chromosomes

- 3- Phenotypic presentation depends on either maternal or paternal chromosome
- 4- Imprinting of mutations on genomes
- 5- Mendelian inheritance

## Answer &amp; Comments

**Answer:** 3- Phenotypic presentation depends on either maternal or paternal chromosome

Genomic imprinting refers to the difference in phenotypic presentation depending on the origin of the disease chromosome from either maternal or paternal.



Genomic imprinting - The imprinting "mark" is represented by a stippled box, and the imprinted state is indicated with an X.



[ Q: 1514 ] MRCPass - Basic Science

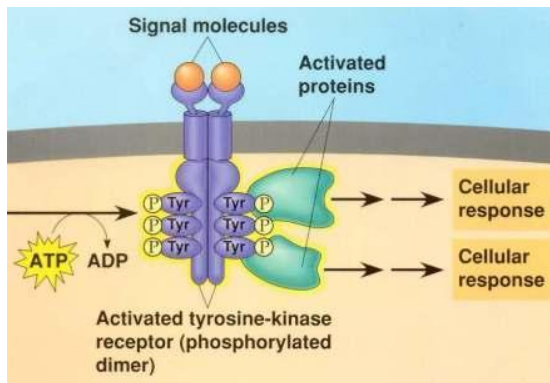
*Phosphorylation of protein tyrosine residues is associated with which of the following?*

- 1- Protein synthesis
- 2- DNA replication
- 3- Proteosomal degradation
- 4- Cell signaling pathways
- 5- Protein degradation

## Answer &amp; Comments

**Answer:** 4- Cell signaling pathways

Protein tyrosine kinases (PTKs) are enzymes which catalyze the phosphorylation of tyrosine residues. These enzymes are involved in cellular signalling pathways and regulate key cell functions such as proliferation, differentiation, anti-apoptotic signalling and neurite outgrowth. Unregulated activation of these enzymes, through mechanisms such as point mutations or over-expression, can lead to various forms of cancer as well as benign proliferative conditions. Indeed, more than 70% of the known oncogenes and proto-oncogenes involved in cancer code for PTKs.



Tyrosine Kinase Receptor



[ Q: 1515 ] MRCPass - Basic Science

A man with mild bleeding disorder is being considered for aspirin for acute coronary syndrome.

*Which one of the effects of aspirin is beneficial in coronary artery disease?*

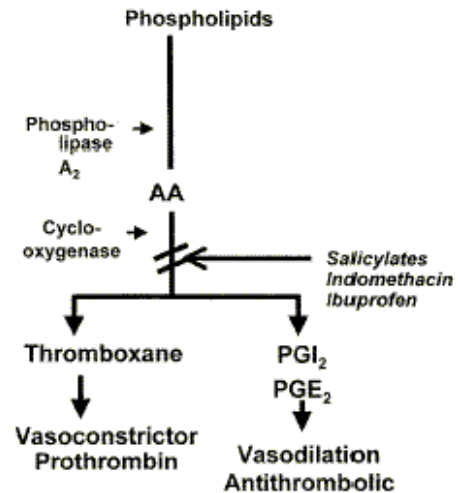
- 1- Reduction in thromboxane A<sub>2</sub> synthesis
- 2- Increase in the prostaglandins
- 3- Glycoprotein IIB IIIA receptor inhibition
- 4- ADP receptor antagonism
- 5- Increase in COX enzymes

## Answer &amp; Comments

**Answer:** 1- Reduction in thromboxane A<sub>2</sub> synthesis

Aspirin blocks the synthesis of COX1 and COX2 enzymes.

This leads to a reduction in the prostaglandin PGG<sub>2</sub>, PGH<sub>2</sub> → thromboxane TXA<sub>2</sub> synthesis ↓. This leads to ↓ platelet aggregation.



Aspirin action (salicylates)



[ Q: 1516 ] MRCPass - Basic Science

A 12 year old child is investigated for multiple skin abscesses. Swabs grow staphylococcus aureus. His cousin had died from a serious septic illness a few years ago.

*What form of immune deficiency is the child likely to have?*

- 1- Eosinophil
- 2- Neutrophil
- 3- Complement
- 4- Lymphocyte
- 5- Immunoglobulin A

## Answer &amp; Comments

**Answer:** 2- Neutrophil



Primary neutrophil deficiencies are rare and are due to an abnormality, usually inherited, of the neutrophil itself. The problem can affect phagocytosis (e.g. deficiency of an adhesion molecule, CD18/LFA deficiency, on the neutrophil surface). Patients with neutrophil defects suffer from recurrent chest infections with bacteria or fungi, recurrent skin abscesses often caused by *Staphylococcus aureus* and poor wound healing.



[ Q: 1517 ] MRCPass - Basic Science

A 40 year old man attends a fertility clinic. Examination shows that he is tall, thin and has bilateral gynaecomastia.

Investigation show high levels of urinary gonadotrophins.

*What is the likely diagnosis?*

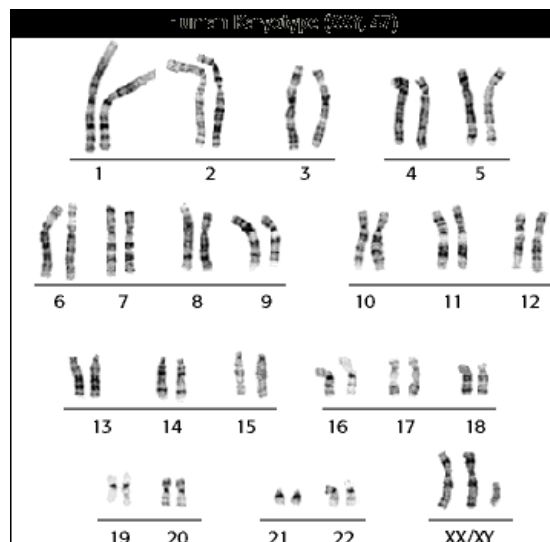
- 1- Homocystinuria
- 2- Marfan syndrome
- 3- Testicular feminisation syndrome
- 4- Noonan's syndrome
- 5- Klinefelter's syndrome

#### Answer & Comments

Answer: 5- Klinefelter's syndrome

Klinefelter's syndrome is the most common chromosomal disorder associated with male hypogonadism and infertility. It is defined classically by a 47, XXY karyotype with variants demonstrating additional X and Y chromosomes.

The syndrome is characterized by hypogonadism (small testes, azoospermia/oligospermia), gynecomastia at late puberty, psychosocial problems, hyalinization and fibrosis of the seminiferous tubules, and elevated urinary gonadotropins.



[ Q: 1518 ] MRCPass - Basic Science

*Which one of the following amino acids is thyroxine derived from?*

- 1- Leucine
- 2- Glycine
- 3- Cystathione
- 4- Tryptophan
- 5- Tyrosine

#### Answer & Comments

Answer: 5- Tyrosine

Each molecule of thyroxine is derived from Two tyrosine molecules and three (T3) or four (T4) iodine molecules.



[ Q: 1519 ] MRCPass - Basic Science

A 30 year man has acute onset of pain around his left eye. On examination, he has a left ptosis and a small left pupil but both react normally to light. Visual acuity, fields and eye movements are normal.

*The site of injury is to which of the following?*

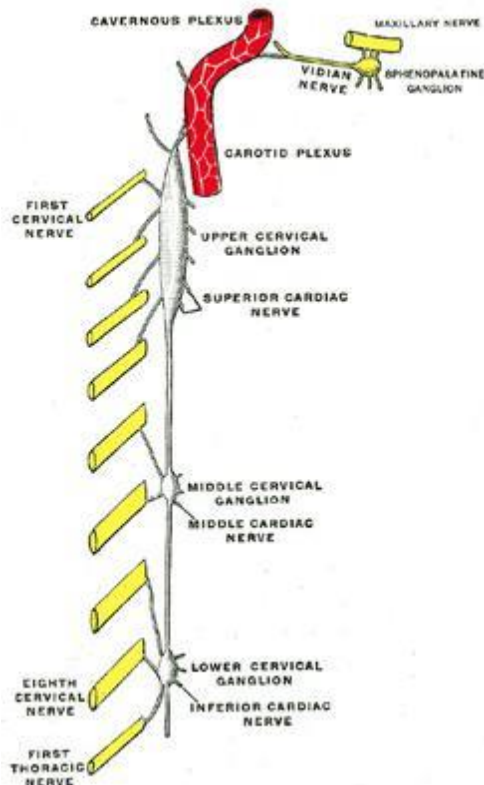
- 1- Midbrain
- 2- Superior cervical ganglion
- 3- Stellate ganglion
- 4- Pons

## 5- Geniculate ganglion

## Answer &amp; Comments

Answer: 2- Superior cervical ganglion

The diagnosis is Horner's syndrome. The sympathetic nerve fibres from the hypothalamus travel through brainstem and cervical cord to T1/T2. These synapse on preganglionic sympathetic fibres, travel up sympathetic chain to superior cervical ganglion, and then synapse onto postganglionic fibres which travel with common and internal carotid arteries.



## [ Q: 1520 ] MRCPass - Basic Science

Two strains of Staph aureus are isolated and both are resistant to ampicillin. Strain 1 retains its resistance to ampicillin when grown from multiple generations in the absence of ampicillin. However strain 2 loses its resistance when grown in the absence of ampicillin.

*Which of the following best explains the loss of antibiotic resistance in strain 2?*

- 1- Ampicillin has eliminated resistant bacteria
- 2- Variability with generations
- 3- Transposition of another sequence into the resistance gene
- 4- Changes in bacterial DNA ligase
- 5- Loss of a plasmid containing the resistance gene

## Answer &amp; Comments

Answer: 5- Loss of a plasmid containing the resistance gene

Bacteria develop resistance to antibiotics by gaining genes which encode particular proteins which offer protection organism. Sometimes this occurs by mutation but at other times gene may be acquired from another bacterial species. The genes are contained in plasmids (circular segments of DNA) separate from bacterial chromosome. Plasmids can easily spread from one bacteria or equally lost. Transfer, loss and gain of plasmids are relatively common compared to single mutations.



## [ Q: 1521 ] MRCPass - Basic Science

A patient has the following blood results.

sodium 131 mmol/l

potassium 4.5 mmol/l

urea 5 mmol/l

creatinine 100 µmol/l

glucose 12 mmol/l

*What is her plasma osmolality?*

- 1- 262
- 2- 267
- 3- 279
- 4- 280
- 5- 290

## Answer &amp; Comments

**Answer:** 3- 279

Plasma osmolality is estimated by the following formula  $2 \times \text{Na} + \text{Urea} + \text{glucose}$ .  $262 + 5 + 12 = 279$  (mmol/kg). An example: high serum osmolality could be caused by HONK.



[ Q: 1522 ] MRCPass - Basic Science

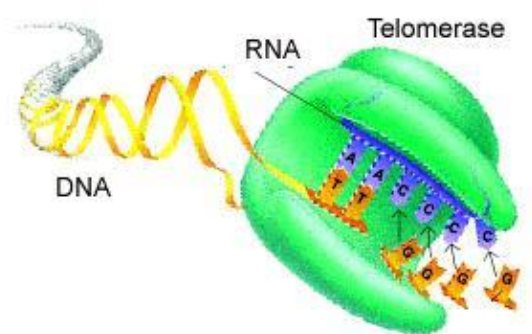
*The level of cellular telomerase activity will affect which of the following?*

- 1- Cell death
- 2- The number of potential cell divisions
- 3- RNA synthesis
- 4- The rate of cell growth
- 5- Cell survival

## Answer &amp; Comments

**Answer:** 2- The number of potential cell divisions

The telomere is a DNA sequence at end of each chromosome which becomes progressively shorter with each division the cell undergoes. The enzyme telomerase is able to lengthen telomere thus preventing the limitation towards cell division.



Telomerase Activity



[ Q: 1523 ] MRCPass - Basic Science

*Which of these areas is involved in the pupillary reflex?*

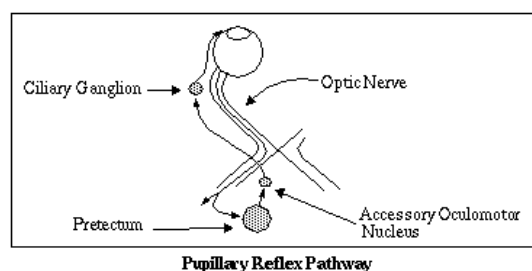
- 1- Occipital cortex

- 2- Stellate ganglion
- 3- Trochlear ganglion
- 4- Vestibular nucleus
- 5- Ciliary ganglion

## Answer &amp; Comments

**Answer:** 5- Ciliary ganglion

The pathway of the pupillary light reflex consists of: retinal receptor cells, bipolar cells, ganglion cells, optic nerve and tract, lateral geniculate bodies, superior colliculus and pretectal nucleus of the high midbrain, Edinger-Westphal nucleus, efferent Two neurone pathway via the oculomotor nerve (IIIrd nerve), ciliary ganglion, constrictor muscle of the iris.



[ Q: 1524 ] MRCPass - Basic Science

*Which one of the following is the best indicator of osteoblastic activity?*

- 1- Aspartate aminotransferase
- 2- Calcium
- 3- Albumin
- 4- Alkaline phosphatase
- 5- Leucocytes

## Answer &amp; Comments

**Answer:** 4- Alkaline phosphatase

Bone alkaline phosphatase (B-ALP) is produced by the osteoblast. It is an index of early osteoblast differentiation and activity.



[ Q: 1525 ] MRCPass - Basic Science

Which one of the following organs is in direct contact anterior surface of left kidney, without being separated from it by peritoneum?

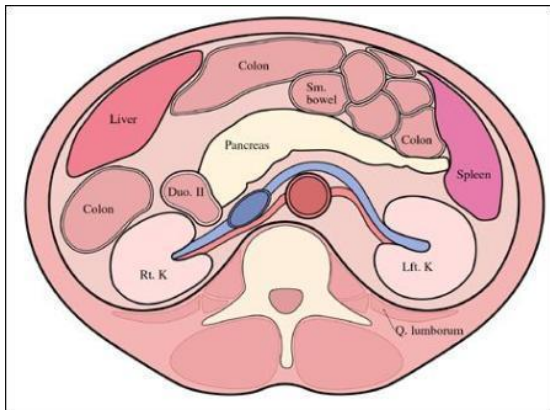
- 1- Spleen
- 2- Descending colon
- 3- Stomach
- 4- Pancreas
- 5- Liver

#### Answer & Comments

Answer: 4- Pancreas

Primarily retroperitoneal organs are those that develop and remain behind (outside) the peritoneum (kidneys, aorta, pancreas).

Secondarily retroperitoneal organs are those that develop within the peritoneal sac but are pushed behind it during growth (e.g. ascending colon, most of duodenum).



Normal structures of the Retroperitoneum



[ Q: 1526 ] MRCPass - Basic Science

A 45 year old woman has G6PD deficiency.

Which one of the following is true regarding the children?

- 1- Half the daughters will be affected
- 2- All the daughters will be affected
- 3- Half the daughters will be carriers

- 4- All the sons are affected
- 5- Half of the sons are affected

#### Answer & Comments

Answer: 4- All the sons are affected

G6PD deficiency is X linked recessive. Assuming the husband is not a gene carrier - her genotype is XXXX and her husband is XY. Both daughters will have the genotype XXX and will be carriers. Both sons will have the genotype XXY and are affected.



[ Q: 1527 ] MRCPass - Basic Science

A 53 year old lady with previous peptic ulcer disease was admitted with persistent vomiting. She looked dehydrated.

Her blood results were sodium 140 mmol/l, potassium 2.5 mmol/l, chloride 86 mmol/l, pH 7.5,  $\text{pCO}_2$  6.0 kPa,  $\text{pO}_2$  14 kPa, standard bicarbonate 40 mmol/l.

What is the acid-base disturbance?

- 1- Hyperchloraemic metabolic alkalosis
- 2- Hypochloraemic metabolic alkalosis
- 3- Respiratory acidosis due to type II respiratory failure
- 4- Respiratory acidosis due to type I respiratory failure
- 5- High anion gap metabolic acidosis

#### Answer & Comments

Answer: 2- Hypochloraemic metabolic alkalosis

This patient had alkalosis due to a high standard bicarbonate metabolic alkalosis. The  $\text{PaCO}_2$  was appropriately low in compensation. This was a hypokalaemic hypochloraemic state because of potassium and chloride loss from vomiting. Treatment was of the underlying cause (pyloric stenosis) and intravenous sodium chloride with potassium.



[ Q: 1528 ] MRCPass - Basic Science

*Glycolysis converts glucose into which of the following?*

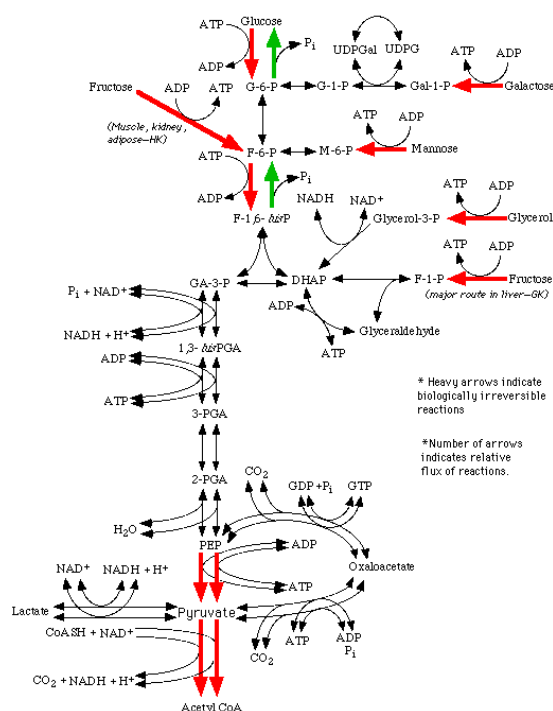
- 1- Glycerol
- 2- Acetyl co A
- 3- Fructose
- 4- Pyruvate
- 5- Citrate

### Answer & Comments

**Answer:** 4- Pyruvate

Glucose, a six-carbon sugar, is converted to Two molecules of a three-carbon unit, pyruvate in glycolysis.

#### Glycolysis/Gluconeogenesis Overview



[ Q: 1529 ] MRCPass - Basic Science

*In which of the following conditions would DNA analysis be useful?*

- 1- Turner's syndrome
- 2- Down's syndrome
- 3- Fragile X syndrome
- 4- Creutzfeld Jakob syndrome

5- Klinefelter's syndrome

### Answer & Comments

**Answer:** 3- Fragile X syndrome

Chromosomal analysis is useful for Turner's (XO), Down's (trisomy 21) and Klinefelter's (XXY). In Fragile X DNA analysis is useful to determine trinucleotide repeats (CGG repeats)



[ Q: 1530 ] MRCPass - Basic Science

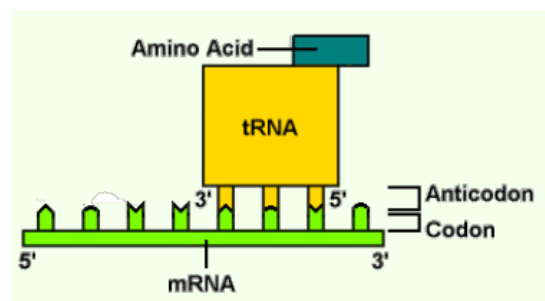
*Which of the following describe a codon correctly?*

- 1- A 3-base pair unit of DNA that codes for an amino acid
- 2- A 3-base pair unit of RNA that codes for an amino acid
- 3- A 2-base pair unit of DNA that codes for a 4 base pair unit of RNA
- 4- A 5-base pair unit of RNA that codes for an amino acid
- 5- A 1-base pair unit of DNA that codes for an amino acid

### Answer & Comments

**Answer:** 2- A 3-base pair unit of RNA that codes for an amino acid

During translation of mRNA, the bases are 'read' in a 3 base pair or triplet code, each 3- base pair unit being referred to as a codon.



[ Q: 1531 ] MRCPass - Basic Science

An 18 year old woman has an



inherited vitamin D metabolic disorder. She has Two brothers who are unaffected.

She has three sisters who are all affected. Her father is affected but not her mother.

*What is the mode of inheritance?*

- 1- Autosomal Dominant
- 2- Autosomal Recessive
- 3- Mitochondrial inheritance
- 4- X linked Recessive
- 5- X linked Dominant

#### Answer & Comments

Answer: 5- X linked Dominant

X linked dominant disorders are rare (e.g. Vitamin D resistant rickets). The condition affects both sexes but females more than males. All children of a homozygous mother are affected (XxXx). Half of the sons and half of the daughters inherit the disorder from an affected mother with the trait (XxX). An affected father (XxY) passes the disease to all his daughters (XxX) but none of his sons (XY).



[ Q: 1532 ] MRCPass - Basic Science

An 18 year old girl took an overdose of 20 g of paracetamol with 3 pints of beer. Upon presentation to hospital 6 hours later, she was commenced on intravenous N - acetylcysteine immediately. 1 hour later she developed tachycardia, flushing and wheezing.

*What is likely to have caused this?*

- 1- IgE hypersensitivity reaction
- 2- Disulfiram type reaction
- 3- Interaction with alcohol
- 4- Interaction with paracetamol
- 5- Late effects of paracetamol overdose

#### Answer & Comments

Answer: 1- IgE hypersensitivity reaction

A systemic anaphylactoid reaction can occur with iv N acetylcysteine.

Features of this are bronchospasm, hypotension, tachycardia, flushing, angioedema and rash.



[ Q: 1533 ] MRCPass - Basic Science

A patient has multiple skin lesions that consist of sessile and pedunculated papules and nodules over the entire surface of his body. In addition, there are multiple pigmented macules on his trunk and axillary freckling. There are Lisch nodules on the iris.

*The inheritance of this condition is:*

- 1- Polygenic inheritance
- 2- Autosomal recessive
- 3- Autosomal dominant
- 4- X-linked dominant
- 5- X-linked recessive

#### Answer & Comments

Answer: 3- Autosomal dominant

The diagnosis is neurofibromatosis, which has autosomal dominant inheritance.



Skin neurofibromas



[ Q: 1534 ] MRCPass - Basic Science

A 55 year old woman has visual problems. On examination, she has a right sided third nerve palsy.



*Which one of the following occurs typically in a third nerve palsy?*

- 1- Small pupil
- 2- Reactive pupil
- 3- Exophthalmos
- 4- Ptosis
- 5- Eye looks upward

#### Answer & Comments

**Answer:** 4- Ptosis

3rd nerve palsy leads to ptosis, dilated unreactive pupil and eye looking down and out (due to unopposed superior oblique and abducent nerves). Exophthalmos can be associated (e.g. graves disease) but is not a feature of 3rd nerve palsy.



Third Nerve Palsy on the Right



[ Q: 1535 ] MRCPass - Basic Science

An 23 year old male has a chronic cough and recurrent bronchopulmonary infections. On examination he is clubbed and there are coarse late inspiratory crepitations (crackles) at both lung bases. His sweat sodium concentration is 80 mmol/L (normal 60 mmol/L).

*The mode of inheritance of the condition is:*

- 1- X linked dominant
- 2- Autosomal recessive

- 3- Autosomal dominant
- 4- X linked recessive
- 5- Multifactorial

#### Answer & Comments

**Answer:** 2- Autosomal recessive

Cystic fibrosis is caused by a gene mutation (CFTR gene) on the long arm of chromosome 7. It is autosomal recessive.



[ Q: 1536 ] MRCPass - Basic Science

A 35 year old man had an injury whilst doing DIY work. He has numbness around the half of his fourth finger and last digit.

*Which of these motor functions is likely to be impaired?*

- 1- Flexion of the fourth finger
- 2- Extension of the fourth finger
- 3- Extension of the little finger
- 4- Thumb abduction
- 5- Thumb adduction

#### Answer & Comments

**Answer:** 5- Thumb adduction

The distribution of sensory loss implies an ulnar nerve lesion. Flexion of the fingers and thumb abduction is supplied by the median nerve. Extension of the fingers are supplied by radial nerve.



[ Q: 1537 ] MRCPass - Basic Science

A 25 year old male presents with wasting and weakness of the muscles of the pelvic girdle. There is evidence of generalised muscular hypertrophy. His maternal grandfather had a similar disorder.

*The mode of inheritance is:*

- 1- Mitochondrial inheritance

- 2- X linked dominant
- 3- Autosomal dominant
- 4- Autosomal recessive
- 5- X-linked recessive

#### Answer & Comments

**Answer:** 5- X-linked recessive

The diagnosis is Becker's muscular dystrophy. This is X linked recessive.



[ Q: 1538 ] MRCPass - Basic Science

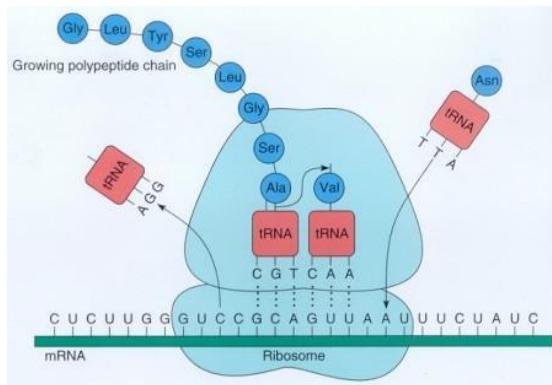
*Which one of the following describes formation of proteins along the mRNA in a 5' to 3' direction?*

- 1- Reverse transcription
- 2- Transcription
- 3- Translation
- 4- Duplication
- 5- Splicing

#### Answer & Comments

**Answer:** 3- Translation

Translation always begins with a methionine residue. The mRNA is translated in the 5' to 3' direction and is read in groups of 3 bases, which are known as codons. New amino acids are added to the carboxyl terminus of the growing peptide chain.



Translation and Protein synthesis



[ Q: 1539 ] MRCPass - Basic Science

A 35 year old woman presents with a right sided Horner's syndrome with anhydrosis of the medial side of the right forehead.

*The cause of the Horner's is most likely due to:*

- 1- Cervical rib
- 2- Lateral medulla infarct
- 3- Injury around internal carotid artery
- 4- Compression from pancoast tumour
- 5- Hypothalamus insult

#### Answer & Comments

**Answer:** 3- Injury around internal carotid artery

All are potential causes of Horner's syndrome. However, the sympathetic plexus around the internal carotid artery supplies the medial side of the forehead, hence anhydrosis to that region specifically points towards injury to the internal carotid artery at that site.



Right sided Horner's (ptosis, miosis, anhydrosis)



[ Q: 1540 ] MRCPass - Basic Science

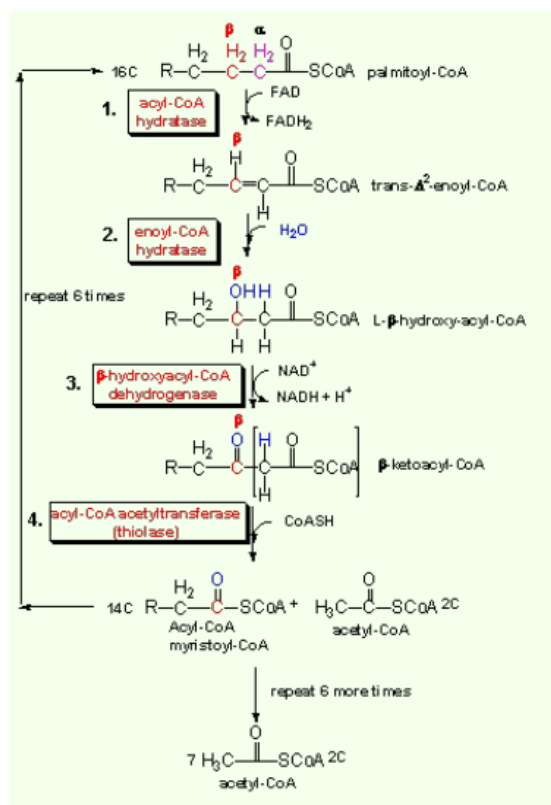
*Which of the following is the product of the beta-oxidation of fatty acids?*

- 1- Glucose 6 phosphate
- 2- Pyruvate
- 3- Oxaloacetate
- 4- Hydroxymethylglutaryl Coenzyme A
- 5- Acetyl Coenzyme A

## Answer &amp; Comments

**Answer:** 5- Acetyl Coenzyme A

Beta oxidation is the process by which fatty acids are broken down to smaller units such that substances such as Acetyl Coenzyme A can enter the citric acid cycle.



Fatty Acid Oxidation



[ Q: 1541 ] MRCPass - Basic Science

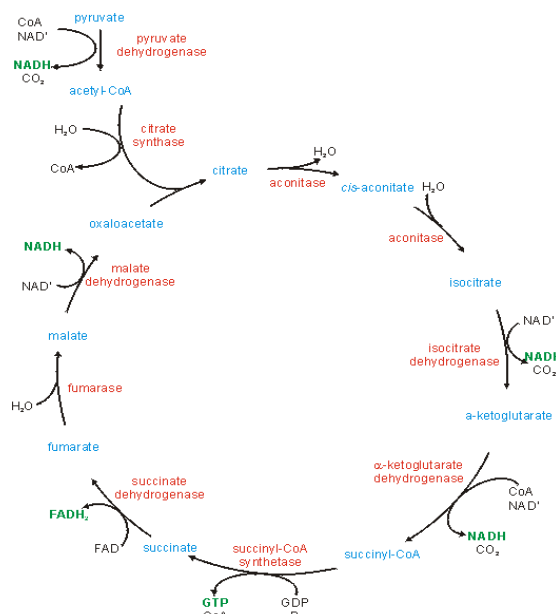
Which of the following is the end product of glycolysis which feeds into the citric acid cycle?

- 1- Glucose
- 2- Fructose
- 3- Citrate
- 4- Pyruvate
- 5- Acetyl coA

## Answer &amp; Comments

**Answer:** 4- Pyruvate

Acetyl Co-A is a two-carbon unit which is formed from pyruvate. Pyruvate is the end product of glycolysis. This reaction is catalysed by pyruvate dehydrogenase. Acetyl coA is the substrate for the citric acid cycle. With each turn of the cycle, Two carbon atoms enter as acetyl-CoA and Two carbon atoms are lost as CO<sub>2</sub>.



[ Q: 1542 ] MRCPass - Basic Science

A 60 year old man with type 1 diabetes and diabetic nephropathy was recovering on a surgical ward after a total colectomy and ileostomy. He had persistent metabolic acidosis and the surgeons concerned about his high potassium concentration and that there may have been some ischaemia in the abdomen causing the acidosis.

However, the patient appeared well perfused and had normal vital signs. He had normal fluid balance and his results showed:

sodium 130 mmol/l

potassium 8.5 mmol/l

creatinine 200 μmol/l (2.16 mg/dl)

chloride 109 μmol/l

8 am cortisol 500 nmol/l (18 μg/dl)

pH 7.29

paCO<sub>2</sub> 3.5 kPa

paO<sub>2</sub> 14 kPa

standard bicarbonate 12 mmol/l

*What is the metabolic disturbance?*

- 1- Hyporeninaemic hyperaldosteronism
- 2- Hyporeninaemic hypoaldosteronism
- 3- Hyperreninaemic hyperaldosteronism
- 4- Hypokalaemic hyperaldosteronism
- 5- Hypochloraemic hypoaldosteronism

#### Answer & Comments

**Answer:** 2- Hyporeninaemic hypoaldosteronism

This man had diabetic nephropathy which predisposes to renal tubular acidosis. Type 4 (hyporeninaemic hypoaldosteronism) RTA is typically associated with high potassium and is found in diabetic and hypertensive renal disease. This patient also had acidosis due to low bicarbonate. The PaCO<sub>2</sub> was appropriately low in compensation. The anion gap was normal (13.5 mmol/l). This makes intra-abdominal ischaemia (which causes lactic acidosis) unlikely.



[ Q: 1543 ] MRCPass - Basic Science

*Genetic anticipation occurs characteristically in which one of the following conditions?*

- 1- Wilson's disease
- 2- Spinocerebellar ataxia type 1
- 3- Haemochromatosis
- 4- Neurofibromatosis
- 5- Tuberous Sclerosis

#### Answer & Comments

**Answer:** 2- Spinocerebellar ataxia type 1

Anticipation refers to the increased severity of disease at earlier age of onset with successive generations.

It is a feature of trinucleotide repeat disorders, which are:

- spinocerebellar ataxia
- fragile X
- myotonic dystrophy
- Huntington's disease



[ Q: 1544 ] MRCPass - Basic Science

A 20 year old man with a tall stature has a cardiac murmur characterized by a midsystolic click. An echocardiogram reveals mitral valve insufficiency with upw and displacement of one leaflet. There is also aortic root dilatation of 4 cm.

*A mutation involving which of the following genes is likely to be present in this patient?*

- 1- Fibrillin
- 2- Ankyrin
- 3- Spectrin
- 4- VEGF
- 5- CFTR

#### Answer & Comments

**Answer:** 1- Fibrillin

Marfan's syndrome is described. This is a connective tissue disorder with the fibrillin gene abnormality, leading to associated floppy mitral valve and also cystic medial necrosis which predisposes aortic dissection.



[ Q: 1545 ] MRCPass - Basic Science

A 45 year old woman presents with weakness of her left upper limb, which developed overnight. She says she usually sleeps on an armchair.

On examination there is weakness of extension of her left elbow, a wrist drop and absent sensation over the first interosseous space of her left hand on the dorsal aspect.

*Where is the lesion?*

- 1- Brachial nerve
- 2- Radial nerve
- 3- Ulnar nerve
- 4- Musculocutaneous nerve
- 5- C5 C6 root at the brachial plexus

#### Answer & Comments

Answer: 2- Radial nerve

The weakness of extension of the elbow indicates weakness of the triceps, hence the lesion should be in the radial nerve, probably higher up at the axilla. Lesions of the radial nerve in the spiral groove spare the triceps.



Wrist Drop in Radial Nerve injury



[ Q: 1546 ] MRCPass - Basic Science

A 27 year old man has hereditary spherocytosis (heterozygous) is married to an unaffected female. They seek advice regarding inheritance of the condition.

*What is the chance of their child being affected?*

- 1- 0%
- 2- 25%
- 3- 50%
- 4- 75%
- 5- 100%

#### Answer & Comments

Answer: 3- 50%

Hereditary spherocytosis is inherited in an autosomal dominant manner and hence the chance of the child being affected is 50%.



[ Q: 1547 ] MRCPass - Basic Science

A 49 year old man was admitted with chest pain. The ECG showed an anterior wall myocardial infarction. He initially settled, but after 48 hours, he complained of further chest pain with ECG changes.

*Which enzyme is the earliest to rise in myocardial infarction?*

- 1- LDH
- 2- CK-MB
- 3- Myoglobin
- 4- Troponin T
- 5- AST

#### Answer & Comments

Answer: 3- Myoglobin

Myoglobin rises rapidly in myocardial infarction. A doubling of the enzyme within 2 hours is very suggestive of an MI. Troponin and CKMB start to rise after 3 hours, and LDH after 12 hours.



[ Q: 1548 ] MRCPass - Basic Science

A 20 year old man has metabolic acidosis with a pH of 7.2.

He has the following results: sodium 135 mmol/l, potassium 4.8 mmol/l, urea 8 μmol/l, creatinine 110 μmol/l, chloride 105 (95-107) mmol/l, bicarbonate 18 (20-28) mmol/l.

*What is his anion gap?*

- 1- 16
- 2- 16.8
- 3- 17.2

4- 18.6

5- 20

**Answer & Comments**Answer: 2- 16.8

Anion gap is calculated by the formula  $(Na + K) - (Cl + [HCO_3^-])$ .  $135 + 4.8 - 105 - 18 = 16.8$ . Normal anion gap is 8-16.

**[ Q: 1549 ] MRCPass - Basic Science**

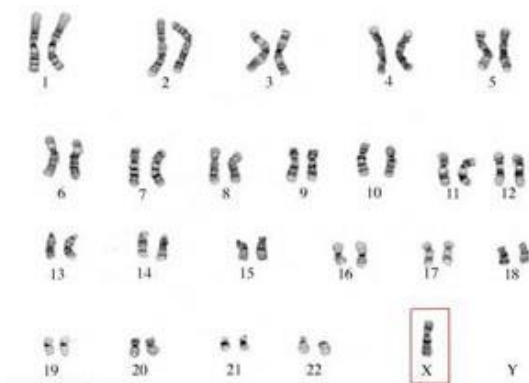
A differential diagnosis list is being considered for a child who is short.

*Which of the following abnormalities is associated with short stature?*

- 1- 47, XXY karyotype
- 2- 47, XYY karyotype
- 3- 45, XXXY karyotype
- 4- 45, XO karyotype
- 5- Fragile X syndrome

**Answer & Comments**Answer: 4- 45, XO karyotype

Turner's syndrome (45, XO karyotype) is associated with short stature.



45, XO karyotype

**[ Q: 1550 ] MRCPass - Basic Science**

*Which one of the following complement deficiencies predisposes to susceptibility to meningococcal infections?*

1- C1

2- C2

3- C3

4- C4

5- C5

**Answer & Comments**Answer: 5- C5

C5-9 complements are part of the membrane attack complex which are important in protection against organisms such as meningococci.

**[ Q: 1551 ] MRCPass - Basic Science**

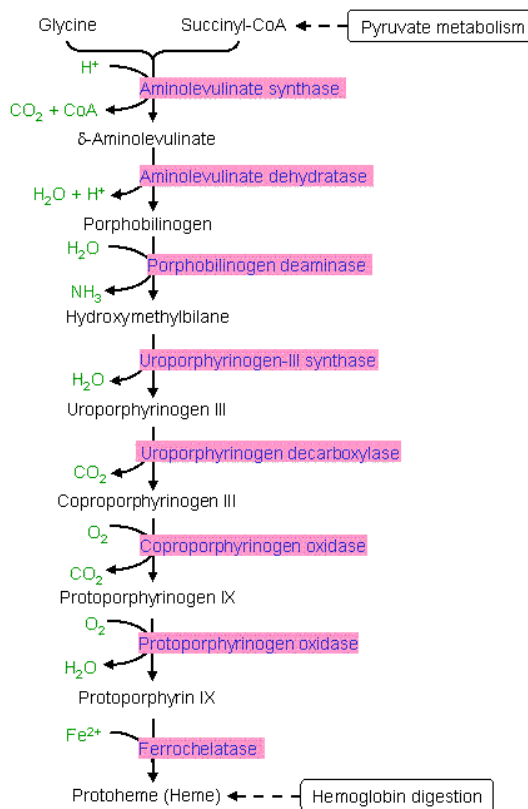
*Which of the following is an end product of porphyrins?*

- 1- Bilirubin
- 2- Globulin
- 3- Haem
- 4- Glycine
- 5- Lactate

**Answer & Comments**Answer: 3- Haem

The first step in the biosynthesis of haem is the condensation of glycine with succinyl CoA to form delta-aminolevulinic acid. This reaction occurs in the mitochondria and is negatively regulated by haem. The reaction pathway then proceeds through intermediate products uroporphobilinogen, uroporphyrinogen III, coproporphyrinogen III, protoporphyrin IX, and finally haem.





Porphyrin metabolism



## [ Q: 1552 ] MRCPass - Basic Science

A 40 year old female complains of tenderness in the radial aspect of his wrist. She is a professional golf player.

With the thumb flexed across the palm of the hand, movement of the wrist into flexion and ulnar deviation causes pain.

*What is the diagnosis?*

- 1- De Quervain's tenosynovitis
- 2- Tennis elbow
- 3- Golfer's wrist
- 4- Ulnar nerve lesion
- 5- Radial nerve lesion

## Answer &amp; Comments

**Answer:** 1- De Quervain's tenosynovitis

The movements described above is the Finkelstein's test. This is diagnostic of De

Quervain's tenosynovitis which is inflammation of the abductor pollicis longus and extensor pollicis brevis.



Finkelstein's test



## [ Q: 1553 ] MRCPass - Basic Science

A 20 year old man has jaundice, but he has normal liver function tests apart from a raised bilirubin.

*Which one of the following enzymes catalyses the conjugation of bilirubin?*

- 1- Amylase
- 2- Glucose 6 phosphatase
- 3- Glucuronyl transferase
- 4- Xanthine oxidase
- 5- Phenylalanine hydroxylase

## Answer &amp; Comments

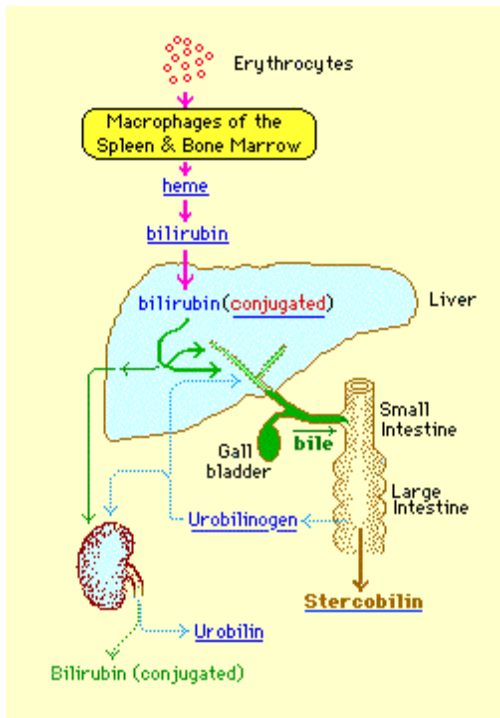
**Answer:** 3- Glucuronyl transferase

Bilirubin is conjugated with glucuronic acid by the enzyme bilirubin uridine 5-diphosphate glucuronyl transferase (UGT).

Crigler-Najjar (CN) syndrome is a congenital familial nonhemolytic jaundice associated with high levels of unconjugated bilirubin due to UGT1 mutation.

Dubin-Johnson syndrome is asymptomatic mild jaundice due to impaired excretion of bilirubin. In contrast to Gilbert's syndrome,

the hyperbilirubinemia is conjugated and bile appears in the urine.



Conjugation of Bilirubin catalysed by Glucuronyl Transferase



thorax showing a large mediastinal mass



[ Q: 1555 ] MRCPass - Basic Science

Which one of these vitamin D products is formed in the liver?

- 1- 1-hydroxycholecalciferol
- 2- 24-hydroxycholecalciferol
- 3- 25-hydroxycholecalciferol
- 4- 24,25-dihydroxycholecalciferol
- 5- 1,25-dihydroxycholecalciferol

#### Answer & Comments

Answer: 3- 25-hydroxycholecalciferol

The active form of vitamin D - 1,25-dihydroxycholecalciferol is formed by regulated hydroxylations. The 25-alpha hydroxylation is performed in the liver, and the 1-alpha hydroxylation in the kidney.



[ Q: 1554 ] MRCPass - Basic Science

A 40 year old man has an anterior mediastinal mass seen on CT scan.

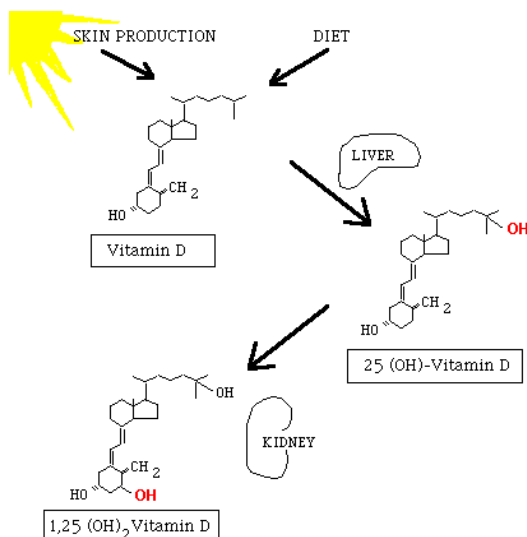
Which of the following is unlikely to be a cause for the mass?

- 1- Thyroid
- 2- Thymus
- 3- Thoracic sarcoma
- 4- Teratoma
- 5- Tumour

#### Answer & Comments

Answer: 3- Thoracic sarcoma

The four Ts for mediastinal masses (anterior) are thyroid, thymoma, teratoma and tumour (lymphomas).



[ Q: 1556 ] MRCPass - Basic Science

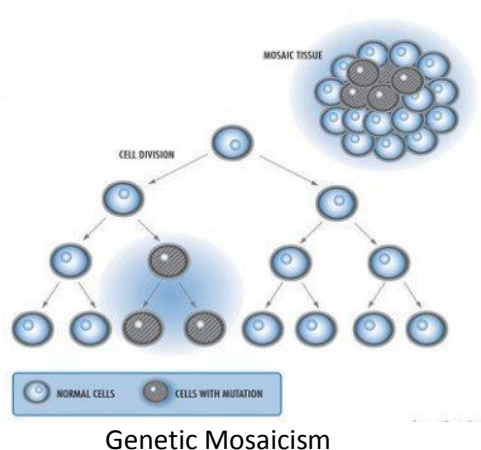
*In genetics, what is the meaning of genetic mosaicism?*

- 1- An activated X chromosome
- 2- RNA is transcribed into DNA
- 3- An individual has 2 or more genetic cell lines
- 4- There is always the same number of chromosomes in all cells
- 5- A form of chromosome trisomy

#### Answer & Comments

**Answer:** 3- An individual has 2 or more genetic cell lines

A Barr body is an inactivated X chromosome. Mosaicism is as defined above - it can comprise of cells of 46 or 47 chromosomes in the same zygote.



[ Q: 1557 ] MRCPass - Basic Science

An 20 year old woman with alpha 1 antitrypsin deficiency attends a genetics clinic for advice regarding the likelihood of her potential child would be affected.

*What is mode of inheritance of this disease?*

- 1- Autosomal dominant
- 2- Autosomal recessive
- 3- X linked dominant
- 4- X linked recessive
- 5- Polygenic

#### Answer & Comments

**Answer:** 2- Autosomal recessive

The inheritance of alpha 1 antitrypsin (A1AT) deficiency is autosomal recessive. The alleles, however, are codominant, which means each allele is responsible for 50% of the circulating A1AT level. The production of alpha1 antiprotease is controlled by a pair of genes at the protease inhibitor (Pi) locus. The most common (90%) allele is M (PiM), and homozygous individuals (MM) produce normal amounts of alpha1 antiprotease (serum levels of 20-53 mmol/L). Deficient levels of alpha1 antiprotease are associated with allele Z (MZ or ZZ). Serum levels greater than 11 mmol/L appear to be protective against emphysema. Emphysema develops in

most (but not all) individuals with serum levels less than 9 mmol/L.



[ Q: 1558 ] MRCPass - Basic Science

An 25 year old man has Duchenne's muscular dystrophy.

*What chances does his daughter's sons have of inheriting the disease?*

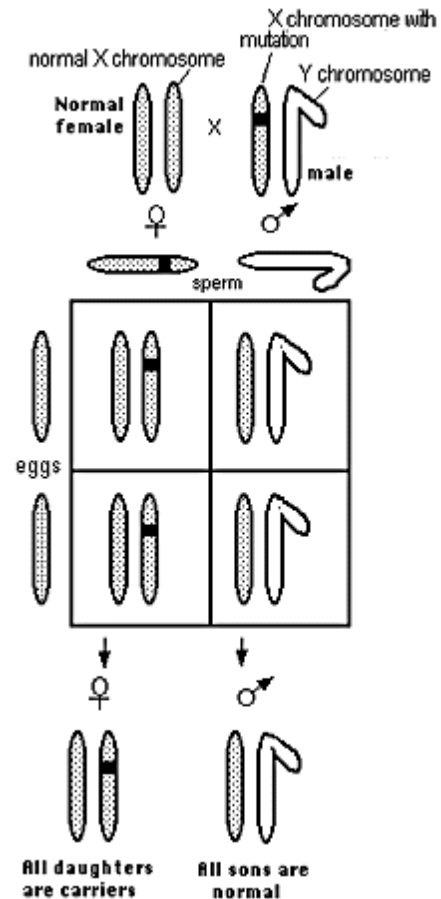
- 1- 100%
- 2- 50%
- 3- 25%
- 4- 10%
- 5- 0%

#### Answer & Comments

Answer: 2- 50%

Duchenne's muscular dystrophy is X linked. This patient is affected (XxY). His wife is likely to be unaffected (XX).

His daughters would all have the chromosome (XxX)- all are carriers. Therefore his daughter's sons will either have the chromosome XxY or XY in 50% chances.



[ Q: 1559 ] MRCPass - Basic Science

A 35 year old woman with a pruritic rash was diagnosed as having systemic mastocytosis. Serum histamine was 2 ng/ml (normal: 0.3-1.0 ng/ml).

*Which one of the following is true regarding mast cells?*

- 1- In mastocytosis there is insufficient mast cells
- 2- Storage granules contain glucose
- 3- Storage granules contain histamine and leukotrienes
- 4- It is an IgG mediated immune response
- 5- High temperature triggers mast cell release

#### Answer & Comments

Answer: 3- Storage granules contain histamine and leukotrienes

Mastocytosis is due to excessive mast cell stimulation. Storage granules contain histamine, leukotrienes, and lytic enzymes. It leads to anaphylactic like states - urticaria, flushing and also GI symptoms such as diarrhoea and nausea. Mast cells are Ig E mediated but can be triggered by injury, drugs and complement activation.



Cutaneous Mastocytosis



[ Q: 1560 ] MRCPass - Basic Science

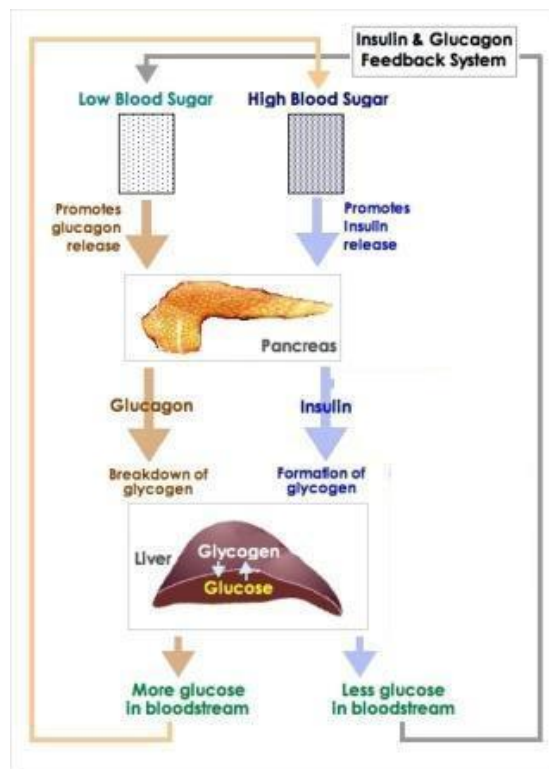
Which one of the following hormones is increased in hypoglycaemia?

- 1- Growth hormone
- 2- Insulin
- 3- Glucagon
- 4- Somatostatin
- 5- Thyroxine

#### Answer & Comments

Answer: 3- Glucagon

Glucagon secretion from the pancreas is increased by amino acids arginine and alanine, fasting (hypoglycaemia), stressful stimuli. Glucagon is inhibited by somatostatin.



[ Q: 1561 ] MRCPass - Basic Science

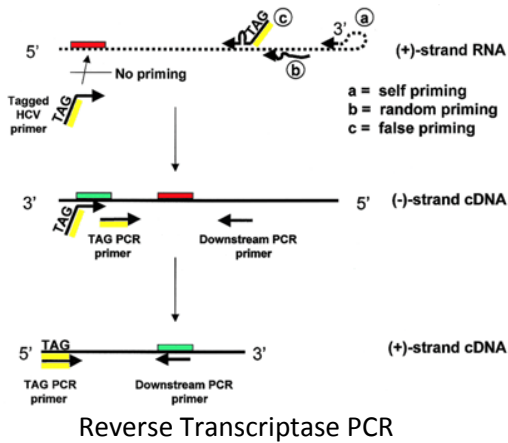
Reverse transcriptase PCR is used to amplify which of the following?

- 1- Proteins
- 2- DNA
- 3- RNA
- 4- Ribosomes
- 5- Plasmids

#### Answer & Comments

Answer: 3- RNA

Reverse transcriptase PCR is a way to amplify RNA. The RNA is transcribed into complementary DNA (cDNA) using enzyme reverse transcriptase. The cDNA is then amplified by PCR.



[ Q: 1562 ] MRCPass - Basic Science

An 25 year old man was admitted with breathlessness. He has not been well for a few days.

His arterial blood gases show :

pH 7.22

pO<sub>2</sub> 15 kPa

pCO<sub>2</sub> 3.2 kPa

bicarbonate 14.7 mmol/L

base excess -5.

*What is this picture consistent with?*

- 1- Acute asthma
- 2- Bulimia
- 3- Paracetamol overdose
- 4- Acute liver failure
- 5- Diabetic ketoacidosis

Answer & Comments

Answer: 5- Diabetic ketoacidosis

This patient has metabolic acidosis with respiratory compensation. The low bicarbonate and low pH suggests metabolic acidosis. In order to compensate, the body hyperventilates, blowing off CO<sub>2</sub> and having a relatively high pO<sub>2</sub>.



[ Q: 1563 ] MRCPass - Basic Science

*Which one of the following diseases*

*involves tumour suppressor genes?*

- 1- Neurofibromatosis
- 2- Sarcoma
- 3- Down's syndrome
- 4- Adenomatous polyposis coli
- 5- Parkinson's disease

Answer & Comments

Answer: 1- Neurofibromatosis

Two hits of the tumour suppressor genes are required for loss of regulation (e.g. loss of both NF-1 genes).

NF-1 gene in neurofibromatosis, BRCA-1 in breast and ovarian cancer, Rb gene and the VHL gene involve tumour suppressor genes. The oncogene SRC is affected in sarcoma.



[ Q: 1564 ] MRCPass - Basic Science

*The screening procedure in which an antibody directed against a desired protein, is used to examine bacterial transformants (for the presence of a specific recombinant) is referred to as a:*

- 1- Mc Fadden's blot
- 2- Southern blot
- 3- Northern blot
- 4- Western blot
- 5- Eastern blot

Answer & Comments

Answer: 4- Western blot

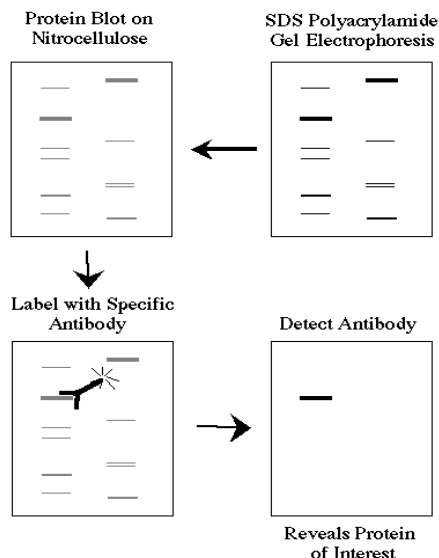
Western blot method uses antibodies to examine proteins immobilized to a membrane support.

Southern blot uses a nucleotide sequence probe to examine DNA fragments separated by gel electrophoresis, then transferred to and immobilized on a membrane support.



Northern blot uses a nucleotide sequence probe to examine RNA immobilized to a membrane support.

Eastern blot does not exist.



[ Q: 1565 ] MRCPass - Basic Science

A 45 year old man who has a renal transplant is on high dose long term steroids and immunosuppression. He is about to travel abroad and seeks vaccination advice.

*Which one of the following vaccinations is contraindicated in this man?*

- 1- Yellow fever
- 2- Haemophilus
- 3- Meningococcus
- 4- Tetanus toxoid
- 5- Diphtheria toxoid

#### Answer & Comments

**Answer:** 1- Yellow fever

The yellow fever is a live vaccine. These are other examples:

- \* measles, mumps and rubella
- \* BCG
- \* poliomyelitis - oral Sabin vaccine

\* typhoid - oral



[ Q: 1566 ] MRCPass - Basic Science

Mutations in myosin have recently been found to underlie the disease familial hypertrophic cardiomyopathy.

*Which one of the following regarding myosin is correct?*

- 1- It is not involved in striated muscle contraction
- 2- Form filaments in a hexameric array of 2 heavy chains only
- 3- Myosin chain mutation is not associated in familial hypertrophic cardiomyopathy
- 4- Carney complex is not a form of myosin chain disorder
- 5- There are sites on myosin which allow for ATP and actin binding

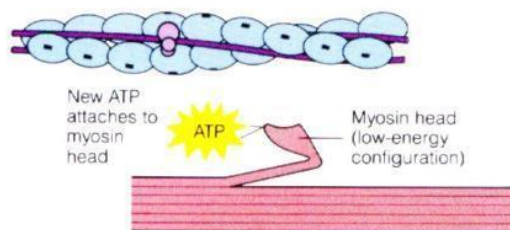
#### Answer & Comments

**Answer:** 5- There are sites on myosin which allow for ATP and actin binding

Myosin is involved in striated muscle contraction.

It forms filaments in a hexameric array of 2 heavy chains and 2 pairs of light chains.

Myosin heavy chain mutation is implicated in familial hypertrophic cardiomyopathy. HOCM and Carney complex are forms of myosin chain disorders.



There are sites on myosin which allow for ATP and actin binding.



[ Q: 1567 ] MRCPass - Basic Science

A 55 year old man has been diagnosed with Burkitt's Lymphoma.

*Which gene mutation is associated with this condition?*

- 1- BRAF
- 2- P 53
- 3- C-myc
- 4- N-myc
- 5- Bcr-Abl

#### Answer & Comments

Answer: 3- C-myc

In Burkitt's lymphoma (associated with Epstein Barr virus), genetic translocations e.g. t(8:14) lead to consequent c-myc rearrangement and overexpression.



[ Q: 1568 ] MRCPass - Basic Science

A 18 year old girl has had a 3rd presentation with meningococcal meningitis. An immunologist suspects a problem with her immune system.

*Which of these are most likely to be defective?*

- 1- Macrophages
- 2- IgG or IgM
- 3- Neutrophils
- 4- Lymphocytes
- 5- Complement C5-9

#### Answer & Comments

Answer: 5- Complement C5-9

Neisseria infection leading to meningococcal meningitis often occurs in patients with complement deficiencies of C5-9. Complements C5-C9 form the Membrane Attack Complex. Deficiencies in these complements lead to depressed bactericidal activity.



[ Q: 1569 ] MRCPass - Basic Science

A 30 year old man was admitted with status epilepticus. He is given intravenous diazepam.

Arterial blood gases on 15 l/min via reservoir bag mask showed pH 7.05,  $\text{paCO}_2$  8 kPa,  $\text{paO}_2$  15 kPa, and standard bicarbonate 16 mmol/l.

His other results were sodium 140 mmol/l, potassium 4 mmol/l, and chloride 98 mmol/l.

*What is the acid-base disturbance?*

- 1- Hyperchloraemic metabolic acidosis
- 2- Normal anion gap metabolic acidosis
- 3- High anion gap metabolic acidosis
- 4- Low anion gap metabolic acidosis
- 5- Respiratory acidosis

#### Answer & Comments

Answer: 3- High anion gap metabolic acidosis

This patient had acidosis with both a high  $\text{PaCO}_2$  and a low standard bicarbonate--a mixed acidosis. The anion gap was 30 mmol/l (increased).

The  $\text{PaO}_2$  is lower than expected because the patient was breathing around 70% oxygen. This fits with the clinical picture: he had a lactic acidosis from prolonged fitting and a respiratory acidosis from intravenous diazepam.



[ Q: 1570 ] MRCPass - Basic Science

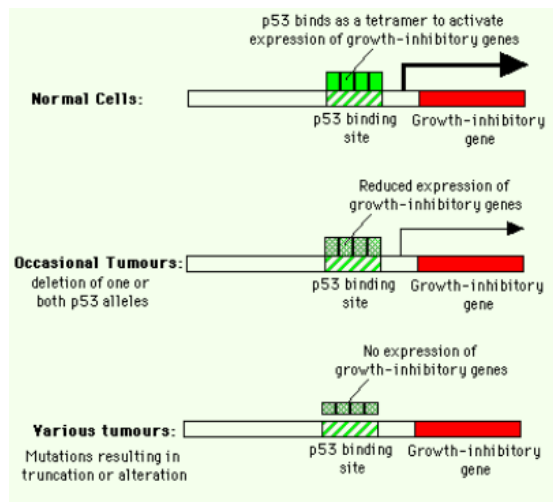
*Which of the following tumour suppressor genes is a tumour suppressor gene involved in promoting apoptosis and programmed cell death?*

- 1- BRCA-1
- 2- P53
- 3- Bcl-2
- 4- Ras
- 5- Rb

## Answer &amp; Comments

**Answer:** 2- P53

Ras is an oncogene. Bcl-2 inhibits rather than promotes apoptosis.



p53 tumour suppressor gene



[ Q: 1571 ] MRCPass - Basic Science

Which one of the following is a trinucleotide repeat disorder?

- 1- Fragile X syndrome
- 2- Duchenne's muscular dystrophy
- 3- Multiple Sclerosis
- 4- Klinefelter's syndrome
- 5- Turner's syndrome

## Answer &amp; Comments

**Answer:** 1- Fragile X syndrome

Fragile X syndrome, myotonic dystrophy, Huntington's disease and Friedrich's ataxia are trinucleotide repeat disorders.



[ Q: 1572 ] MRCPass - Basic Science

The parents of a child with cystic fibrosis want to know the risk of their next child being a carrier of the condition, risk of the child being not affected or affected.

Which ONE of the following is the correct risk for the child being only a carrier?

- 1- 10%
- 2- 25%
- 3- 50%
- 4- 75%
- 5- 100%

## Answer &amp; Comments

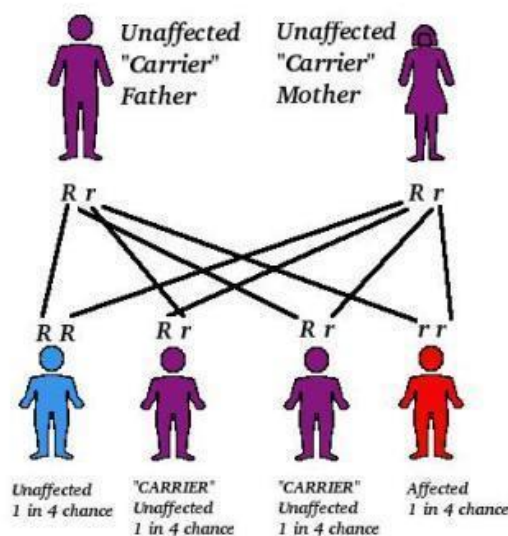
**Answer:** 3- 50%

Cystic Fibrosis has autosomal recessive inheritance.

As both parents are carriers (AxA, BxB) of the Cystic Fibrosis gene, then chances of another child being affected (AxBx) is 1 in 4 (25%).

The chances of their child being free from the CF gene (AB) is also 1 in 4 (25%).

The chances of a child being a carrier (AxB or ABx) is 1 in 2 (50%).



[ Q: 1573 ] MRCPass - Basic Science

What form of virus is the herpes virus?

- 1- Triple stranded RNA virus
- 2- Single stranded RNA virus
- 3- Single stranded DNA virus
- 4- Double stranded RNA virus
- 5- Double stranded DNA virus

## Answer &amp; Comments

Answer: 5- Double stranded DNA virus

Herpes virus is a double stranded DNA virus.



[ Q: 1574 ] MRCPass - Basic Science

A 50 year old man complains of visual loss. On examination, he has right sided homonymous inferior quadrantanopia.

*Which one of the following lesions is likely?*

- 1- Left sided temporal area
- 2- Left sided parietal area
- 3- Occipital lobe
- 4- Optic chiasm
- 5- Optic nerve

## Answer &amp; Comments

Answer: 2- Left sided parietal area

A contralateral lower parietal lesion causes lower homonymous quadrantanopia as described.



[ Q: 1575 ] MRCPass - Basic Science

*Western blotting is used to detect:*

- 1- DNA
- 2- RNA
- 3- Protein
- 4- Antibodies
- 5- Enzymes

## Answer &amp; Comments

Answer: 3- Protein

Western blotting can be used to detect and quantify proteins (e.g. bovine protein).



[ Q: 1576 ] MRCPass - Basic Science

*Which one of the following features is consistent with higher cortical involvement*

*rather than a diagnosis of a subcortical lacunar stroke?*

- 1- Ataxia
- 2- Dysarthria
- 3- Dysphasia
- 4- Pure motor features
- 5- Pure sensory symptoms

## Answer &amp; Comments

Answer: 3- Dysphasia

Evidence of higher cortical involvement, for example - dysphasia, dyscalculia or disturbance of consciousness, would not be consistent with a lacunar syndrome.



[ Q: 1577 ] MRCPass - Basic Science

*Which one of the following blood gas results may be an analytical error?*

- 1- PH 7.6,  $\text{paCO}_2$  - 2,  $\text{pO}_2$  - 13, Bicarbonate 30
- 2- PH 7.3,  $\text{paCO}_2$  - 7,  $\text{pO}_2$  - 10, Bicarbonate 14
- 3- PH 7.5,  $\text{paCO}_2$  - 8,  $\text{pO}_2$  - 10, Bicarbonate 14
- 4- PH 7.5,  $\text{paCO}_2$  - 6,  $\text{pO}_2$  - 12, Bicarbonate 26
- 5- PH 7.2,  $\text{paCO}_2$  - 9,  $\text{pO}_2$  9, Bicarbonate 12

## Answer &amp; Comments

Answer: 3- PH 7.5,  $\text{PaCO}_2$  - 8,  $\text{PO}_2$  - 10, Bicarbonate 14

The patient has a high  $\text{CO}_2$  and low bicarbonate which would suggest uncompensated respiratory acidosis, hence the pH is too high to fit the scenario.



[ Q: 1578 ] MRCPass - Basic Science

*Which of the following is amplified by reverse transcriptase PCR?*

- 1- RNA
- 2- Linear DNA
- 3- Circular DNA

- 4- Glycoproteins  
5- Reverse transcriptase enzyme

### Answer & Comments

**Answer:** 1- RNA

Reverse transcriptase PCR is used to amplify RNA, whilst conventional PCR is used to amplify DNA.



[ Q: 1579 ] MRCPass - Basic Science

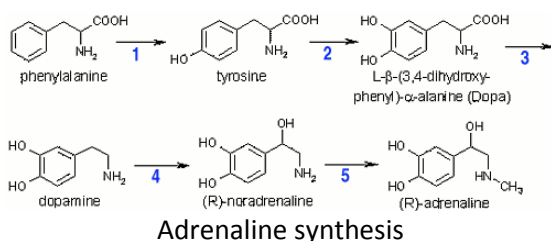
*Adrenaline is a product of which amino acid?*

- 1- Arginine  
2- Glutamine  
3- Valine  
4- Lysine  
5- Tyrosine

### Answer & Comments

**Answer:** 5- Tyrosine

Dopamine, adrenaline and noradrenaline are derived from tyrosine via the intermediate dopa.



[ Q: 1580 ] MRCPass - Basic Science

*Which one of the following breaks down into Glucose and Galactose?*

- 1- Ribose  
2- Sucrose  
3- Fructose  
4- Lactose  
5- Phosphofructose

### Answer & Comments

**Answer:** 4- Lactose

Lactose is broken down into glucose and galactose by an enzyme called lactase.



[ Q: 1581 ] MRCPass - Basic Science

A 75 year old lady has sudden movements of her arm where she throws her arm outwards, and uncontrollably injures herself.

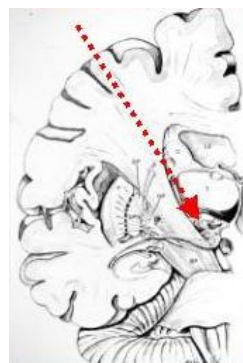
*Which of the following areas could have sustained an infarct?*

- 1- Globus pallidus  
2- Pontine nucleus  
3- Corpus callosum  
4- Subthalamic nucleus  
5- Thalamus

### Answer & Comments

**Answer:** 4- Subthalamic nucleus

Hemiballismus is caused by a subthalamic nucleus lesion, which is commonly due to an infarct.



Subthalamic Nucleus



## [ Q: 1582 ] MRCPass - Dermatology

A 30 year lady presents has erythema nodosum. She has a low grade fever. There no recent history of travel abroad.

*Which of the following would be the most appropriate investigation for this patient?*

- 1- Colonoscopy
- 2- ESR
- 3- Upper GI endoscopy
- 4- Chest x ray
- 5- Coxsackie viral serology

## Answer &amp; Comments

Answer: 4- Chest x ray

A chest x ray would help exclude sarcoidosis, as most of the other causes are unlikely due to the history. The causes of erythema nodosum are streptococcal infection, acute sarcoidosis, oral contraceptive pill, sulphonamides, penicillins, inflammatory bow el disease, TB, Behçet's Disease.



## [ Q: 1583 ] MRCPass - Dermatology

A 60 year old lady presents with a nodular slightly pigmented skin lesion in her left arm.

*Which of the following change in the feature suggests poor prognosis if it is malignant?*

- 1- Increased diameter
- 2- Increased depth
- 3- Color
- 4- Shape
- 5- Consistency

## Answer &amp; Comments

Answer: 2- Increased depth

The features are suggestive of Malignant melanoma. The main determinants of

prognosis for malignant melanoma are the tumour thickness, measured from the overlying granular layer of the epidermis to the deepest easily identifiable tumour cells - the Breslow thickness, and the presence of ulceration of the primary tumour.



Malignant melanoma



## [ Q: 1584 ] MRCPass - Dermatology

A 23 year old student presents with extensive, hypopigmented, scaly lesions on his back and the chest.

The rash had been present for the last 1 year and had gradually become more extensive.

He is otherwise well.

*What is the treatment of choice?*

- 1- Ketoconazole cream
- 2- Nystatin cream
- 3- Terbinafine cream
- 4- Oral terbinafine
- 5- Oral itraconazole

## Answer &amp; Comments

Answer: 1- Ketoconazole cream

The features are suggestive of Pityriasis versicolor infection, a skin infection which often presents as patches of relatively depigmented skin. The cause is overgrowth of the yeast *Malassezia furfur*. If the skin is not



tanned, the skin appears brown with a slight brownish scaling and wrinkling. It is slightly itchy. It is usually a disease of young adults, predominantly affecting the upper trunk. Ketoconazole (topical) is the treatment of choice.



Pityriasis Versicolor



[ Q: 1585 ] MRCPass - Dermatology

A 40 year old man presented to his GP because of painful blisters on the backs of his hands in the summer. He also had a similar rash on the forehead. His hands, face and forehead were covered with thick, wrinkled, hyperpigmented skin. The patient's urine was reddish orange.

*What is the likely diagnosis?*

- 1- Contact dermatitis
- 2- Pityriasis rosea
- 3- Epidermolysis bullosa
- 4- Pemphigoid
- 5- Porphyria cutanea tarda

Answer & Comments

**Answer:** 5- Porphyria cutanea tarda

In porphyria cutanea tarda, the urine fluoresces pink to red. Porphyria cutanea tarda's onset is typically during the fourth or fifth decade of life. The disease tends to develop, recur, or worsen during the spring and summer, when exposure to sunlight is greatest. Photosensitivity is the hallmark of porphyria cutanea tarda. The deficient

enzyme in porphyria cutanea tarda is uroporphyrinogen decarboxylase.



Porphyria cutanea tarda



[ Q: 1586 ] MRCPass - Dermatology

A 45 year old man presents with discrete, round, scaly, pigmented patches on the back. Pityriasis versicolor is diagnosed by the dermatologist.

*What is the appropriate treatment?*

- 1- Terbinafine
- 2- Prednisolone
- 3- Rifampicin
- 4- Ultraviolet light
- 5- Topical selenium sulphide

Answer & Comments

**Answer:** 5- Topical selenium sulphide

Pityriasis versicolor (also called tinea versicolor) is a skin infection caused by a fungus called *Malassezia furfur*. Topical antifungal medications - containing either 2.5% selenium sulfide or ketoconazole cream can be used. Oral ketoconazole 200 mg daily for 7 days can also be used. Other topical antifungal agents such as clotrimazole, miconazole or terbinafine are less widely recommended.



[ Q: 1587 ] MRCPass - Dermatology

A 45 year old patient had renal transplantation 8 years ago. He is on regular

immunosuppressive medication. He presented with a large warty like growth on the back of his buttocks.

*What should be done next?*

- 1- Observation
- 2- Skin biopsy
- 3- Stop immunosuppressives
- 4- Cryotherapy
- 5- Viral PCR

#### Answer & Comments

**Answer:** 2- Skin biopsy

Warts are caused by the human papilloma virus, and tend to develop after 4 to 5 years following transplantation. The risk of skin cancer is increased especially in sun exposed areas. Treatment of all warts are usually with cryotherapy, However with this growth a biopsy is necessary followed by possible surgery.



#### [ Q: 1588 ] MRCPass - Dermatology

A 20 year old male, born of non-consanguineous parents, was referred to our department with complaint of the insidious appearance of red-purple papules over the trunk with occasionally itching and pin-point bleeding, which had progressed over the past 4 years. These papules slowly increased in number and size. There was no history of anhidrosis, abdominal or bone pain, acral paresthesias, chest pain, or loss of visual acuity.

On examination, Clusters of individual, punctate, dark red to blue-black papules were seen mainly over the anterior chest, back, and hips.

*What is the likely diagnosis?*

- 1- Erythema multiforme
- 2- Erythema marginatum
- 3- Angiokeratoderma corporis diffusum

- 4- Cafe au lait spots
- 5- Neurofibromas

#### Answer & Comments

**Answer:** 3- Angiokeratoderma corporis diffusum

Systemic angiokeratoma corporis diffusum (Anderson-Fabry disease) is an unusual X-linked lysosomal disorder characterized by deficiency of  $\alpha$ -galactosidase. Onset of the disease usually occurs during childhood or adolescence with periodic crises of severe pain in the extremities (acroparesthesias) and the appearance of vascular cutaneous lesions (angiokeratomas), hypohidrosis or anhidrosis, and characteristic corneal and lenticular opacities.



Angiokeratoderma corporis diffusum



#### [ Q: 1589 ] MRCPass - Dermatology

A 72 year old woman has developed a rash over 6 weeks. On examination, there were numerous fluid filled blisters over upper and lower limbs as well as the trunk.

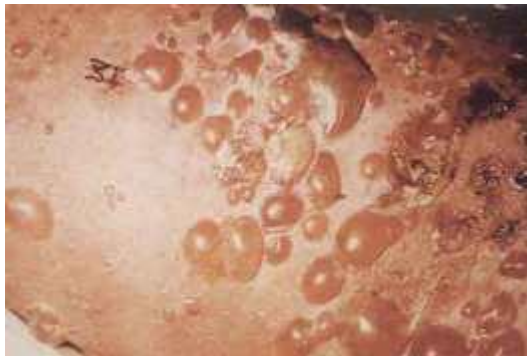
*What is the likely diagnosis?*

- 1- Pemphigus
- 2- Pemphigoid
- 3- Eczema
- 4- Psoriasis
- 5- Erythema nodosum

#### Answer & Comments

**Answer:** 2- Pemphigoid

Pemphigoid is a disease of the elderly, rarely presenting before 50 years of age. Presentation is with large, tense, itchy blisters on an erythematous base. They usually occur on the upper arms and thighs and may spread to the trunk. Lesions may be 2-5 cm in diameter. They are thick walled and may last for several days.



Bullous pemphigoid



## [ Q: 1590 ] MRCPass - Dermatology

A 60 year old lady has developed an uncomfortable venous ulcer on leg. On examination, her leg is oedematous but peripheral pulses are palpable. Doppler ultrasound reveals no arterial disease.

*Which one of the following is the most appropriate management?*

- 1- Leg elevation
- 2- Surgical debridement
- 3- Intravenous antibiotics
- 4- Compression dressing
- 5- Topical steroids

## Answer &amp; Comments

Answer: 4- Compression dressing

Compression helps to control painful swelling from fluid buildup (edema) and is recognized as effective treatment for venous ulceration.



## [ Q: 1591 ] MRCPass - Dermatology

A 58 year old woman was seen because of a three day history of itchy bumps

on her arms. Examination showed an erythematous papular eruption with possible pustules in the arm. There were burrows between the fingers.

*What is the diagnosis?*

- 1- Molluscum contagiosum
- 2- Scabies
- 3- Dermatitis herpetiformis
- 4- Impetigo
- 5- Psoriasis

## Answer &amp; Comments

Answer: 2- Scabies

Scabies is spread by *Sarcoptes scabiei*. It is spread by contact only. Effective agents are benzyl benzoate, ivermectin and permethrin (Lyclear solution).



Scabies Rash



Scabies Mite



## [ Q: 1592 ] MRCPass - Dermatology

A 50 year old woman has had ulcerative colitis diagnosed 10 years ago. Over the last 5 months, she has developed an ulcer above the medial malleolus. This is large has a necrotic base and the edges are undermined.

*How should it be managed?*

- 1- Foam dressings
- 2- Debridement
- 3- Broad spectrum antibiotics
- 4- High dose steroids
- 5- Emmollients

#### Answer & Comments

Answer: 4- High dose steroids

The diagnosis is pyoderma gangrenosum complicating ulcerative colitis. The initial treatment should be with high dose steroids orally and topical steroids. Methotrexate and ciclosporin can also be used.



Pyoderma Gangrenosum



#### [ Q: 1593 ] MRCPass - Dermatology

A 35 year old man presented to his general practitioner with a rash beginning around the left ear and spreading into the periorbital region. He was then referred urgently to the hospital for assessment. The patient had a history of atopic eczema (since childhood), rhinitis, and asthma. He was taking inhaled corticosteroids for asthma and had last received a course of systemic steroids one year previously. There were no risk factors for HIV infection.

On examination he was alert, he was pyrexial at 39.2°C, his pulse was 100 bpm, and his blood pressure was 130/70 mm Hg. There was a widespread erythematous rash covering his face, chest, and arms, which was described as wet with a yellowish exudate. The rash extended around both eyes, which could not be opened.

*What is the likely diagnosis?*

- 1- Varicella zoster infection
- 2- Pityriasis versicolor
- 3- Psoriasis
- 4- Pemphigus
- 5- Eczema herpeticum

#### Answer & Comments

Answer: 5- Eczema herpeticum

Eczema herpeticum represents widespread cutaneous HSV in patients with pre-existing skin disorders. Eczema herpeticum is also known as Kaposi's Varicelliform Eruption. The patient often presents with clusters of umbilicated vesicles appearing on abnormal or even apparently normal skin. The eruption then spreads over the following 7 to 10 days, and the umbilicated vesicles evolve into classic discrete "punched-out" small erosions.

Typically, the patient experiences fever, malaise, and generalized lymphadenopathy. The vesicles may breakdown and coalesce into large erosions that have a tendency to be complicated by secondary infection. The course of this condition is usually 2 to 6 weeks. Recurrent episodes may occur, but the clinical presentation is typically milder.



#### [ Q: 1594 ] MRCPass - Dermatology

A 50 year old woman with atopic eczema presented with worsening skin symptoms of erythema and pruritus.

She had tried skin emollients, and topical betnovate.



*Which drug is most appropriate next?*

- 1- Retinoids
- 2- Hydrocortisone
- 3- Coal tar
- 4- Cyclosporin
- 5- Minocycline

#### Answer & Comments

Answer: 4- Cyclosporin

The use of cyclosporin in Atopic Dermatitis has been fairly well studied and a high percentage of patients improve with therapy.



Atopic Eczema



[ Q: 1595 ] MRCPass - Dermatology

A 45 year old man who has been exposed to the sun is complaining of a rash with blistering on his hands, chest and forehead. On examination, there were small areas of excoriation around the rash.

*What is the diagnosis?*

- 1- Pustular psoriasis
- 2- Pemphigoid
- 3- Dermatitis herpetiformis
- 4- Porphyria cutanea tarda
- 5- Granuloma annulare

#### Answer & Comments

Answer: 4- Porphyria cutanea tarda

Patients with Porphyria Cutanea Tarda develop liver damage and fragile skin and

fluid-filled blisters on the face, arms, hands and other skin exposed to sun.



Blistering rash seen in porphyria cutanea tarda



[ Q: 1596 ] MRCPass - Dermatology

A 45 year old lady presents to the dermatologist with target like lesions. The circular lesions have a central blister.

*Which one of the following is the most common cause?*

- 1- Pemphigoid
- 2- Herpes simplex
- 3- Mycoplasma
- 4- Vitamin C deficiency
- 5- Orf

#### Answer & Comments

Answer: 2- Herpes simplex

The lesions are erythema multiforme. The commonest cause is quoted to be herpes simplex, although all the others are also causes.



Erythema Multiforme



## [ Q: 1597 ] MRCPass - Dermatology

A 42 year old woman has developed a rash on her face over a year and a half. The rash is erythematous and scaly. There are areas of alopecia on the scalp.

*What is the diagnosis?*

- 1- Lupus pernio
- 2- Discoid lupus
- 3- Erythroderma
- 4- Dermatitis herpetiformis
- 5- Scabies

## Answer &amp; Comments

Answer: 2- Discoid lupus

Discoid lupus erythematosus is characterized by inflammation and scarring type skin lesions which occur on the face, ears and scalp. These lesions develop as an inflamed growth with scaling and a warty like appearance. The center areas may appear lighter in color surrounded by an area darker than the normal skin. When lesions occur in hairy areas such as the scalp, permanent scarring and hair loss can occur.



Discoid lupus



## [ Q: 1598 ] MRCPass - Dermatology

A 42 year old man has been treated by the GP for 2 days for presumed psoriasis with topical betnovate.

However, his rash worsened and now presents with severe erythema all over the body.

*What treatment is recommended?*

- 1- Oral steroid
- 2- Cooling with air
- 3- Topical tar
- 4- Topical steroids
- 5- Topical soft white paraffin

## Answer &amp; Comments

Answer: 5- Topical soft white paraffin

A patient with severe erythroderma should be hospitalized for supportive care. Cooling is done with intravenous fluids and regulating room temperature. Emmollients should be used. Steroids and topical tar preparations should be avoided.



Erythroderma



## [ Q: 1599 ] MRCPass - Dermatology

A 62 year old woman has a rash on the trunk with concentric erythematous bands forming a wood-grain appearance.

*Which one of the following erythematous conditions is associated with gastric carcinoma?*



- 1- Erythema multiforme
- 2- Erythema ab igne
- 3- Erythema gyratum repens
- 4- Erythema nodosum
- 5- Erythroderma

#### Answer & Comments

**Answer:** 3- Erythema gyratum repens

Erythema Gyratum Repens is associated with malignancy in as many as 80% of patients. Among visceral malignancies, the lung is the most common site, followed by the breast, urinary bladder, uterus and/or cervix, GI tract (stomach), and prostate.



Erythema Gyratum repens



#### [ Q: 1600 ] MRCPass - Dermatology

A 27 year old complained of diarrhoea, abdominal pain and fever for the past few days.

On examination there was a visible mouth ulcer and anal skin tags. On the lower shin there were red painful raised skin lesions.

**What is the most probable diagnosis?**

- 1- Behcet's disease
- 2- Pyoderma gangrenosum
- 3- Erythema multiforme
- 4- Erythema nodosum
- 5- Erythema marginatum

#### Answer & Comments

**Answer:** 4- Erythema nodosum

This is a description of erythema nodosum related to inflammatory bowel disease.

The fever, diarrhoea and abdominal pains may be due to ulcerative colitis or Crohn's disease.



Erythema nodosum



#### [ Q: 1601 ] MRCPass - Dermatology

A 37 year old man presented to his general practitioner with a rash beginning around the right ear and spreading into the periorbital region. He was known to have eczema and also was HIV positive.

3 days later, he was systemically unwell, complaining of sweats and rigors. On examination he was alert, he was pyrexial at 39.2°C, his pulse was 100 bpm, and his blood pressure was 128/70 mm Hg. There was a widespread erythematous rash covering his face, chest, and arms. The rash extended around both eyes, which could not be opened. On closer inspection of the rash, it was apparent that there were multiple small vesicles 1-2 mm in diameter and shallow ulcers over the face and periorbital region.

**What is the likely diagnosis?**

- 1- Dermatitis herpetiformis
- 2- Smallpox

- 3- Tinea versicolor
- 4- Pemphigus vulgaris
- 5- Eczema herpeticum

#### Answer & Comments

**Answer:** 5- Eczema herpeticum

The diagnosis is consistent with eczema herpeticum and probable secondary bacterial infection. This is caused by HSV-1, and is more common among immunosuppressed individuals. Treatment is with aciclovir.



Eczema Herpeticum



#### [ Q: 1602 ] MRCPass - Dermatology

A 60 year old man presented with a pruritic rash. Burrows were found on his arms and in the web spaces of the fingers. He was treated with Permethrin creams and improved. 3 weeks later, he came to the hospital again when the pruritus returned suddenly.

**What is the likely cause for this?**

- 1- Allergy to Permethrin cream
- 2- Re-infection with scabies mites
- 3- Type 4 hypersensitivity to mite feces
- 4- Erythema multiforme
- 5- Dermatitis herpetiformis

#### Answer & Comments

**Answer:** 3- Type 4 hypersensitivity to mite feces

A delayed type IV hypersensitivity reaction to the mites, their eggs, or scybala (ie, packets of feces) occurs approximately 30 days after infestation. This reaction is responsible for the intense pruritus that is the hallmark of the disease. Individuals who already are sensitized from a prior infestation can develop symptoms within hours when exposed to any allergens.



#### [ Q: 1603 ] MRCPass - Dermatology

A 40 year old HIV-infected man comes in for routine care and evaluation of skin lesions on his face. His most recent tests showed a CD4 count of 38 cells/mm<sup>3</sup> and HIV RNA of 87,000 copies/ml. He is not compliant on antiretroviral therapy. The patient describes a 2-3 month history of persistent papules on his fingers that have gradually increased in number and size.

**What is the likely diagnosis?**

- 1- Molluscum contagiosum
- 2- Kaposi's sarcoma
- 3- Herpes zoster virus infection
- 4- Orf
- 5- Malignant melanoma

#### Answer & Comments

**Answer:** 1- Molluscum contagiosum

Molluscum contagiosum is caused by the DNA pox virus. Papular lesions occur first followed by macular lesions. Pruritus can occur, but erythema or inflammation is uncommon around the lesion. The lesion is present for several weeks and is self limiting.



Molluscum Contagiosum



## [ Q: 1604 ] MRCPass - Dermatology

An 80 year old man complained of bullous skin lesions on both the upper and lower extremities. On examination there were 1-2 cm blistering lesions throughout the body.

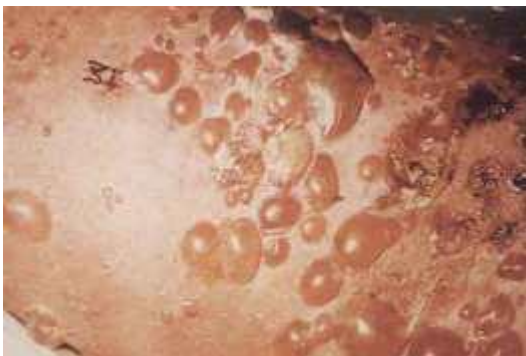
*What is the most probable diagnosis?*

- 1- Pemphigus vulgaris
- 2- Erythema multiforme
- 3- Dermatitis herpetiformis
- 4- Bullous pemphigoid
- 5- Insect bite

## Answer &amp; Comments

Answer: 4- Bullous pemphigoid

Bullous pemphigoid is more common than pemphigus, occurs more commonly in later life (>60 years). Large bullae appear anywhere on the skin, they tend to be itchy and the lesions are deep and mucosal involvement rare. The reverse is true for pemphigus vulgaris.



## [ Q: 1605 ] MRCPass - Dermatology

A 30 year old woman presents with a rash. The rash consists of erythematous plaques, excoriations, and vesicles some of which have ruptured leaving a crust. She has had a past history of gluten sensitive enteropathy.

*What is the best treatment for the rash?*

- 1- Prednisolone
- 2- Azathioprine
- 3- Dapsone
- 4- Calamine lotion
- 5- E45 cream

## Answer &amp; Comments

Answer: 3- Dapsone

Dapsone (diaminodiphenyl sulfone) and sulfapyridine are the primary medications used to treat Dermatitis Herpetiformis (DH). Dapsone is often used initially; sulfapyridine is substituted in patients unable to tolerate dapsone.

Improvement may be dramatic; symptomatic improvement of skin lesions often begins within hours. Other, less effective, treatments for DH include colchicine, cyclosporine, and prednisone.



Dermatitis Herpetiformis



## [ Q: 1606 ] MRCPass - Dermatology

A 14 year old girl has developed ulcerated lumps on the back of her legs. She has a previous history of tuberculosis.

*What is the likely diagnosis?*

- 1- Erythema multiforme
- 2- Erythema nodosum
- 3- Lupus erythematosus
- 4- Erythema induratum
- 5- Granuloma annulare

## Answer &amp; Comments

**Answer:** 4- Erythema induratum

Erythema induratum is a chronic, recurring panniculitis that is found predominantly on the legs of women with tuberculin hypersensitivity.



Erythema Induratum



## [ Q: 1607 ] MRCPass - Dermatology

A 19 year old patient with acne vulgaris has already been treated with a course of minocycline, but the condition is not responding well to treatment.

*What treatment option should be considered next?*

- 1- Erythromycin

2- Prednisolone

3- UV B

4- Oral retinoids

5- Cryotherapy

## Answer &amp; Comments

**Answer:** 4- Oral retinoids

Due to its anti-inflammatory activity, isotretinoin (retinoid) is an extremely effective drug if given systemically in severe forms of seborrhoea and acne.



## [ Q: 1608 ] MRCPass - Dermatology

A 52 year old man has recently travelled back from South America 2 weeks ago on holiday. He presents to the dermatologist with a facial ulcer with granulating base.

*What is the likely diagnosis?*

- 1- Behcet's disease
- 2- Cutaneous leishmaniasis
- 3- Syphilis
- 4- Basal cell carcinoma
- 5- Squamous cell carcinoma

## Answer &amp; Comments

**Answer:** 2- Cutaneous leishmaniasis

Cutaneous leishmaniasis is spread by female sandflies of the genus *Phlebotomus*. The causative agents include *L. (V.) braziliensis*, *L. (L.) mexicana*, *L. (V.) panamensis*, and related species. Most infections follow a bite from an infected sandfly and remain subclinical. However, in some cases, after an incubation period of 1-12 weeks, a papule develops that enlarges and ulcerates. The typical lesion are crusty, painless ulcers on exposed skin. Ulcerative lesions are usually shallow and circular with well-defined, raised borders and a bed of granulation tissue. Local lymphadenopathy only occurs in the presence



of bacterial superinfection. Cutaneous leishmaniasis is found predominantly in South America, Central Africa, around the Mediterranean Sea and India.



Cutaneous Leishmaniasis



[ Q: 1609 ] MRCPass - Dermatology

A 23 year old student presents with extensive, hypopigmented, slightly scaly lesions on his back and the chest.

The rash had been present for the last 1 year and had gradually become more extensive.

He is otherwise well.

*What is the treatment of choice?*

- 1- Ketoconazole cream
- 2- Nystatin cream
- 3- Terbinafine cream
- 4- Oral terbinafine
- 5- Oral itraconazole

Answer & Comments

Answer: 1- Ketoconazole cream

The features are suggestive of Pityriasis versicolor infection, a skin infection which often presents as patches of relatively depigmented skin. The cause is overgrowth of the yeast *Malassezia furfur*. If the skin is not tanned, the skin appears fawn with a slight brown scaling and wrinkling. It is slightly

itchy. It is usually a disease of young adults, predominantly affecting the upper trunk.



Pityriasis Versicolor



[ Q: 1610 ] MRCPass - Dermatology

A 65 year old man, who received a renal transplant 30 years ago, was evaluated in clinic when he complained of a lump behind his ear. He has been on ciclosporin and tacrolimus. On physical examination he had an ulcerated nodule behind the ear.

*What is the likely diagnosis?*

- 1- Seborrhoeic wart
- 2- Actinic keratosis
- 3- Squamous cell carcinoma
- 4- Basal cell carcinoma
- 5- Malignant melanoma

Answer & Comments

Answer: 3- Squamous cell carcinoma

Patients who have had renal transplants have a 60 fold increased risk of squamous cell carcinoma. Treatment is with radiotherapy, surgical excision and reduction of immunosuppression where possible.



Squamous cell carcinoma



[ Q: 1611 ] MRCPass -  
Ophthalmology

A 65 year old woman with a chronic disease has asymptomatic thinning of the sclera through which the underlying uveal tissue can be seen.

*Which of the following diseases is most strongly associated with scleromalacia perforans?*

- 1- Psoriasis
- 2- HIV
- 3- SLE
- 4- Rheumatoid arthritis
- 5- Wegener's granulomatosis

Answer & Comments

Answer: 4- Rheumatoid arthritis

Scleromalacia perforans is painless thinning of the sclera. Vast majority of patients are females with longstanding rheumatoid arthritis (sero positive). It is rarely seen in Behcet's and ulcerative colitis.



[ Q: 1612 ] MRCPass -  
Ophthalmology

A 25 year old woman presents with gritty eyes. Her children have similar symptoms. On examination, the conjunctivae are red and swollen with a discharge which is crusting the eyelashes.

*What is the most likely diagnosis?*

- 1- Keratoconjunctivitis sicca
- 2- Bacterial conjunctivitis
- 3- Anterior uveitis
- 4- Hay fever
- 5- Herpes simplex keratitis

Answer & Comments

Answer: 2- Bacterial conjunctivitis

The clinical presentation fits conjunctivitis best. The most common organisms are staphylococcus, streptococcus and Haemophilus influenzae. Treatment is with chloramphenicol eyedrops.



[ Q: 1613 ] MRCPass -  
Ophthalmology

A 25 year old female presents with a history of headache, vomiting and blurred vision for the last 2 weeks. Direct questioning reveals that she is taking a tablet for her spots (acne). She has a high BMI and bilateral papilloedema on examination.

*Which of the following investigations is most likely to help confirm the diagnosis?*

- 1- MRI brain
- 2- Copper studies
- 3- Anti Ach antibodies
- 4- CSF pressure measurement
- 5- Iron studies

Answer & Comments

Answer: 4- CSF pressure measurement

The diagnosis is Benign Intracranial Hypertension (Pseudotumour Cerebri).

This is commoner in obese women of child bearing age. It is also associated with the OCP, steroid withdrawal, tetracyclines, headache, nausea, visual symptoms and a VIth cranial nerve palsy.

CSF pressure is typically raised when lumbar puncture is performed. Removal of CSF may relieve the pressure and improve the visual symptoms and headaches.



[ Q: 1614 ] MRCPass -  
Ophthalmology

A 30 year old man presents with a 24 hour history of blurred vision in left eye and mild left frontal headache. He had a 15 year history



of diabetes mellitus. Examination of the left eye visual field shows a central scotoma.

*What is the likely diagnosis?*

- 1- Central retinal artery occlusion
- 2- Optic neuritis
- 3- Pituitary tumour
- 4- Hypertensive retinopathy
- 5- Diabetic retinopathy

#### Answer & Comments

Answer: 2- Optic neuritis

A painful, more gradual onset visual impairment is consistent with optic neuritis.

Occlusion of central retinal artery will result in almost immediate loss of visual acuity in the involved eye, usually without pain.



[ Q: 1615 ] MRCPass -  
Ophthalmology

A 65 year old woman who has had a previous myocardial infarction complains of a problem with the vision in her left eye.

*Prior to fundoscopy, the best agent to dilate her pupils with is:*

- 1- Phenylephrine 10%
- 2- Phenylephrine 2.5%
- 3- Cyclopentolate 1%
- 4- Tropicamide 0.5%
- 5- Tropicamide 1%

#### Answer & Comments

Answer: 5- Tropicamide 1%

Tropicamide (0.5% for children, 1% for adults) is best for diagnostic purposes, dilating the pupil for two to four hours by blocking the parasympathetic terminals in the papillary constrictor muscle.

Cyclopentolate works in a similar mode but lasts for six to eight hours. Phenylephrine

drops dilate the pupil by stimulating the sympathetic system and should be used with caution in adults with ischaemic heart disease.



[ Q: 1616 ] MRCPass -  
Ophthalmology

A 60 year old man with a history of hypertension presents with visual loss on the right side. On examination he has visual loss affecting the temporal field of his right eye and the nasal field of his left eye.

*Which of the following areas is likely to show infarction on brain imaging?*

- 1- Left occipital lobe
- 2- Right occipital lobe
- 3- Right frontal lobe
- 4- Optic chiasm
- 5- Right temporal lobe

#### Answer & Comments

Answer: 1- Left occipital lobe

The patient has a right homonymous hemianopia. Lesion is therefore behind optic chiasm and most likely to be affecting the left occipital lobe.



[ Q: 1617 ] MRCPass -  
Ophthalmology

A 48 year old woman develops painful bloodshot eyes.

*Which one of the following features would make scleritis more likely than iritis?*

- 1- Pain which wakes her from sleep
- 2- Irregular pupil
- 3- Keratitis
- 4- Photophobia
- 5- Visual blurring

#### Answer & Comments

Answer: 1- Pain which wakes her from sleep

Features of iritis are photophobia, visual blurring, keratic precipitates (best seen with a slit lamp) and irregularity of the pupil. Severe pain suggests scleritis and is not typical of iritis or episcleritis (which is milder and affects a smaller portion of the eye). In scleritis, the pain can be so severe that it disturbs sleep.



[ Q: 1618 ] MRCPass -  
Ophthalmology

A 35 year old artist has painful eyes which have been diagnosed as iritis by an ophthalmologist requiring steroid treatment.

*Which of the following condition is a likely cause?*

- 1- Ankylosing spondylitis
- 2- Gallstones
- 3- Gout
- 4- Osteoarthritis
- 5- Pancreatitis

#### Answer & Comments

Answer: 1- Ankylosing spondylitis

Iritis (anterior uveitis) is found in all the inflammatory conditions such as Behcet's disease, Reiter's syndrome, ankylosing spondylitis and sarcoidosis.



Iritis



[ Q: 1619 ] MRCPass -  
Ophthalmology

A 70 year man presents with sudden loss of vision in his right eye, associated with a relative afferent papillary defect. He has poorly controlled hypertension and smokes.

*Which of the following is likely?*

- 1- Optic nerve compression
- 2- Optic neuritis
- 3- Chronic open angle glaucoma
- 4- Retinal vascular occlusion
- 5- Macular degeneration

#### Answer & Comments

Answer: 4- Retinal vascular occlusion

The history of acute loss of vision affecting one eye suggests an acute vascular occlusion. This is associated with an underlying disorder such as glaucoma, hypertension, diabetes, coagulation disorders, atherosclerosis, or hyperlipidemia.

The visual loss after retinal vein occlusion is variable. Haemorrhage may be present, and the patient may be at risk for developing glaucoma. In retinal artery occlusion, there is a profound visual loss. The degree of loss is related to the location of the occlusion. There is also a further risk of stroke because the emboli could be thrown off to other parts of the brain.



[ Q: 1620 ] MRCPass -  
Ophthalmology

A 45 year old man recently returned from a holiday. He presents to A&E complaining of disturbance in vision in his right eye. Examination reveals a thickened ingrowth of conjunctiva with prominent vessels which has extended to overlie the cornea.

*Which of the following is the most likely diagnosis?*

- 1- Acute closure angle glaucoma
- 2- Behcet's disease of the eye
- 3- Conjunctivitis
- 4- Pterygium
- 5- Scleritis

#### Answer & Comments

Answer: 4- Pterygium

Pterygium is a raised, wedge-shaped growth of the conjunctiva. It is most common among those who live in tropical climates or spend a lot of time in the sun. Symptoms may include irritation, redness, and tearing. Pterygia are nourished by tiny capillaries that supply blood to the tissue. As the pterygium develops, it may alter the shape of the cornea, causing astigmatism. If the pterygium invades the central cornea, it is removed surgically.



[ Q: 1621 ] MRCPass -  
Ophthalmology

A 18 year old man is referred with progressive visual loss. He first noticed that reading had become difficult, and then had difficulty seeing further distances. On examination, visual acuity is reduced to 6/18 bilaterally. There are bilateral central scotomas bilaterally, with loss of colour vision. Fundoscopy is normal, apart from possibly increased tortuosity of vessels.

*What is the most likely diagnosis?*

- 1- Diabetic retinopathy
- 2- Gaucher's disease
- 3- Leber's hereditary optic neuropathy
- 4- Lawrence Moon Biedl syndrome
- 5- Multiple sclerosis

#### Answer & Comments

Answer: 3- Leber's hereditary optic neuropathy

Leber's hereditary optic neuropathy is a mitochondrial disease, which affects the retina. Patients may also develop ataxia and cognitive changes. Fundoscopy is usually limited in value.

Gaucher's disease causes a pigmented retina, Lawrence Moon Biedl causes retinitis pigmentosa, Multiple sclerosis causes a disc pallor.



[ Q: 1622 ] MRCPass -  
Ophthalmology

A 18 year old man progressive visual loss. On fundoscopy, there are multiple, dark, bone corpuscles across the retina and pallor of the optic disc. Examination of his visual fields reveals peripheral field loss.

*Which one of the following is most likely to be the underlying diagnosis?*

- 1- Diabetes
- 2- Hypertension
- 3- Retinoblastoma
- 4- Kearns Sayre's disease
- 5- Neurofibromatosis

#### Answer & Comments

Answer: 4- Kearns Sayre's disease

The clinical picture is consistent with retinitis pigmentosa. Causes are:

- Abetalipoproteinaemia
- Mitochondrial diseases (Kearns Sayre, CPEO)
- Friedreich's and other cerebellar ataxias
- Lawrence-Moon Syndrome (cognitive impairment and obesity)
- Bardet-Biedl Syndrome (syndactyly and high BMI)

■ Refsum Disease



[ Q: 1623 ] MRCPass -  
Ophthalmology

A 60 year old patient presents with a right sided quadrantic hemianopia.

*Which of the following conditions is likely to cause this presentation?*

- 1- A lesion of optic chiasm
- 2- Chloroquine poisoning
- 3- A lesion of occipital cortex
- 4- Alcohol
- 5- Diabetic retinopathy

Answer & Comments

Answer: 3- A lesion of occipital cortex

A partial occipital cortex insult (e.g. infarct) may cause this. Lesions of the temporal and parietal parts of the optic radiation can also cause a quadrantic hemianopia. A lesion of optic chiasm would cause a bitemporal hemianopia. Chloroquine poisoning causes symmetric bilateral scotomas.



[ Q: 1624 ] MRCPass -  
Ophthalmology

A 42-year-old man with a history of end-stage renal disease, hypertension and hepatitis C infection, was hospitalized with shortness of breath. Chest XR showed left-sided pleural effusion, and aspiration revealed an exudative process. Pleural biopsy specimens showed necrotic tissue with focal fibrosis, noncaseating granulomas, and acid-fast bacilli. Culture was positive for Mycobacterium tuberculosis. Isoniazid (300 mg) orally and pyrazinamide (2 g) after hemodialysis sessions; vitamin B6 (50 mg) and Ethambutol (15 mg/kg per day) were commenced.

Visual acuity testing before initiation of treatment showed 20/20 vision in both eyes and normal color vision. Three months later,

repeat testing showed revealed a best corrected visual acuity of 20/200 with the right eye and counting fingers at 4 feet with the left eye. Automated visual field testing results revealed a central scotoma with inferior temporal quadrant defects in both eyes.

*What is the cause of visual deterioration?*

- 1- Vitamin C deficiency
- 2- Hypertension
- 3- Ethambutol toxicity
- 4- Middle cerebral artery stroke
- 5- Hepatitis C

Answer & Comments

Answer: 3- Ethambutol toxicity

The diagnosis is toxic optic neuropathy. The anterior visual pathway is susceptible to damage from toxins or nutritional deficiency. Ethambutol is one drug that commonly is associated with toxic optic neuropathy. The optic

neuropathy that occurs is dose dependent and duration related. There is a reported incidence of 1% - 5% of optic neuropathy with ethambutol. Toxicity generally does not develop until after treatment for at least 1.5 months.

Isoniazid, ethylene glycol and amiodarone are other associated drugs. Causes of nutritional optic neuropathy include tobacco, ethanol, thiamine deficiency and vitamin B-12 deficiency.



[ Q: 1625 ] MRCPass -  
Ophthalmology

A 25 year old man presents with blurring of vision in his right eye. Examination reveals visual acuity in the right eye of 6/18 and in the left eye 6/6. Visual fields confrontation reveal a right temporal visual field defect and partial

loss of the superior part of temporal field of the left eye.

*Where is the likely position of lesion responsible this defect?*

- 1- Retina
- 2- Optic nerve
- 3- Optic chiasm
- 4- Temporal lobe
- 5- Frontal lobe

#### Answer & Comments

Answer: 3- Optic chiasm

The likely localization of the lesion is around the optic chiasm, spreading up the right optic nerve. The signs indicate a bitemporal visual field defect with involvement of the right optic nerve (decreased visual acuity). An occipital lobe lesion causes a congruous homonymous hemianopia. A temporal lobe lesion causes an upper homonymous quadrantanopia.



[ Q: 1626 ] MRCPass - Ophthalmology

A 30 year old woman has been having increasing dryness and discomfort affecting her eyes. On examination, her visual acuity is normal in both eyes. There are early cataracts visible in both lenses. The eyes appear red and mildly inflamed bilaterally. An Schirmer's test confirms that tear production is diminished.

*What is the clinical diagnosis?*

- 1- Hypopyon
- 2- Sicca syndrome
- 3- Conjunctivitis
- 4- Ectropion
- 5- Posterior uveitis

#### Answer & Comments

Answer: 2- Sicca syndrome

The diagnosis is sicca syndrome, which can be caused by drugs tricyclic antidepressants, high dose diuretics and  $\beta$ -blockers. Sjorgens (anti Ro Ab) and sarcoidosis (serum ACE) are systemic causes.



[ Q: 1627 ] MRCPass - Ophthalmology

A 30 year woman presents with 2 month's history of episodic, brief visual loss affecting the right eye. Over the last one year she had gained a considerable amount of weight. Examination reveals a BMI of 33, bilateral optic disc swelling, worse on the right and small retinal haemorrhages on the right.

*What is the likely diagnosis?*

- 1- Sagittal sinus thrombosis
- 2- Benign intracranial hypertension
- 3- Optic neuritis
- 4- Graves eye disease
- 5- Pituitary tumour

#### Answer & Comments

Answer: 2- Benign intracranial hypertension

Benign intracranial hypertension is raised intracranial pressure in the absence of a mass lesion or of hydrocephalus. It usually occurs in young obese females in their third or fourth decade and is often idiopathic.

The condition appears to be due to impaired CSF absorption from the subarachnoid space across the arachnoid villi into the dural sinuses. Drugs such as tetracyclines and oral contraceptive pill are associated with the condition.



[ Q: 1628 ] MRCPass - Ophthalmology

A 55 year old woman complains of severe pain in her right eye. There is blurring of vision and she feels nauseated and has vomited several

times. Earlier in the day she has undergone colonoscopy for evaluation of Crohn's disease.

*What is the likely cause of her painful red eye?*

- 1- Conjunctivitis
- 2- Episcleritis
- 3- Acute angle closure glaucoma
- 4- Anterior uveitis
- 5- Retinitis pigmentosa

#### Answer & Comments

**Answer:** 3- Acute angle closure glaucoma

Acute angle-closure glaucoma is caused by a rapid increase intraocular pressure. Anticholinergic agents are sometimes used during endoscopy to cause smooth muscle relaxation to aid examination when difficulty is encountered. These agents cause pupillary dilatation thus precipitating acute angle closure glaucoma. Treatment can be with miotic agents (pilocarpine) which contract ciliary muscle, tightening the trabecular meshwork and allow increased outflow of the aqueous. Topical beta-adrenergic receptor antagonists (e.g. Timolol eye drops) decrease aqueous humor production by the ciliary body.



[ Q: 1629 ] MRCPass -  
Ophthalmology

A 55 year old man known to be HIV positive presents with loss of vision. Fundoscopy reveals yellow white patches with multiple associated haemorrhages. In view of the likely diagnosis, *which of the following drugs would be appropriate?*

- 1- Zidovudine
- 2- Indinavir
- 3- Prednisolone
- 4- Foscarnet
- 5- Amphotericin B

#### Answer & Comments

**Answer:** 4- Foscarnet

The most frequent opportunistic infection that involves the eye in AIDS is CMV retinitis which is likely in this case. This is classically described as a 'cheese and tomato on pizza' appearance. Toxoplasma tends not to show haemorrhagic changes. CMV retinitis can be treated with ganciclovir and foscarnet.



[ Q: 1630 ] MRCPass -  
Ophthalmology

A 20 year old lady develops a deterioration in vision in her left eye over 2 days. She complains of discomfort in the eye and thinks that difficulty with perception of colour was the first problem that she noticed. On examination, visual acuity on the left is only to light perception. The pupil appears dilated and does not constrict to light, although does when a torch is shone in the right eye.

*What is the most likely diagnosis?*

- 1- Anterior ischaemic optic neuropathy
- 2- Central retinal artery occlusion
- 3- Optic neuritis
- 4- Retinitis pigmentosa
- 5- Epiphora

#### Answer & Comments

**Answer:** 3- Optic neuritis

Optic neuritis is a cause of acute vision loss but also is noteworthy because of its high association with multiple sclerosis. Of patients with multiple sclerosis, 15-20% initially present with an episode of optic neuritis. The classic clinical triad of optic neuritis includes the following:

- Loss of vision,
- Eye pain,



- Dyschromatopsia (impairment of accurate color vision)



[ Q: 1631 ] MRCPass -  
Ophthalmology

A 60 year old woman presents with headache, photophobia, nausea and vomiting. She has blurred vision in her left eye. On examination on the left the eye is red, the pupil is oval and fixed, and the cornea appears cloudy.

Visual acuity is poor.

*What is the diagnosis?*

- 1- Acute scleritis
- 2- Retinal haemorrhage
- 3- Keratoconjunctivitis sicca
- 4- Acute primary closed angle glaucoma
- 5- Primary open angle glaucoma

#### Answer & Comments

Answer: 4- Acute primary closed angle glaucoma

The clinical features are characteristic of acute primary closed angle glaucoma. With the condition, eyeball feels hard on palpation. It usually occurs in hypermetropic people with small eyeballs in whom the anterior chamber drainage angle is narrow. When the iris becomes apposed to the lens and prevents the efflux of aqueous from the posterior chamber, the drainage angle is

obstructed, resulting in a rapid rise in intraocular pressure.

Emergency treatment is with agents to lower intraocular pressure. Topical beta-adrenergic antagonists such as timolol and betaxolol decrease aqueous production. The carbonic anhydrase inhibitor, acetazolamide, also decreases aqueous production and should be given in conjunction.

Once the acute attack has been broken, the definitive therapy for narrow-angle glaucoma is surgical. A peripheral iridotomy, surgical or by laser therapy, is performed.



[ Q: 1632 ] MRCPass -  
Ophthalmology

A 30 year old lady has a dilated right pupil that is poorly responsive to light in comparison to the left.

Accommodation reflex is very sluggish. There is no evidence of ptosis and eye movements are normal. Further examination reveals absent ankle jerks.

*The cause of her dilated pupil is most likely to be:*

- 1- Multiple Sclerosis
- 2- Myotonic dystrophy
- 3- A right Holmes-Adie Pupil
- 4- A left Argyll-Robertson pupil
- 5- Horner's syndrome

#### Answer & Comments

Answer: 3- A right Holmes-Adie Pupil

Holmes-Adie pupil is a cause of anisocoria. It affects young adults (2:1 females:males). The affected pupil is enlarged, poorly reactive to light and supersensitive to 0.1% pilocarpine. Ability to accommodate is also impaired and sluggish. The clue in this scenario is that it is associated with the loss of tendon reflexes.

Argyll-Robertson pupil is seen in syphilis. Pupils are bilaterally small and irregular. It is unreactive to light but reactive to accommodation.



[ Q: 1633 ] MRCPass -  
Ophthalmology

A 20 year old man with learning difficulties has acute blurring of vision in his right eye. Examination reveals ectopia lentis.

*What is the likely diagnosis?*

- 1- Pseudoxanthoma elasticum
- 2- Ehlers Danlos syndrome
- 3- Marfan's syndrome
- 4- Metachromatic leukodystrophy
- 5- Homocystinuria

**Answer & Comments**

**Answer:** 5- Homocystinuria

Ectopia lentis/ subluxation of lens is associated with Ehlers Danlos syndrome, Marfan's syndrome, Refsum's disease and homocystinuria. The presentation fits with homocystinuria as the other diseases are not associated with mental retardation.

Homocystinuric patients typically have fair skin coarse hair, osteoporosis, mental retardation (nearly 50%), seizure disorder, marfanoid habitus and increased thromboembolic risk.



[ Q: 1634 ] MRCPass -  
Ophthalmology

A 25-year-old male who is known to have ankylosing spondylitis presents with a painful, aching, photophobic red eye. Examination shows cells floating in the anterior chamber and precipitated on the back of the cornea.

*What is the best treatment option?*

- 1- Local steroids
- 2- Local steroids and a pupil dilator
- 3- Local steroids and a pupil constrictor
- 4- Chloramphenicol
- 5- Oral prednisolone

**Answer & Comments**

**Answer:** 2- Local steroids and a pupil dilator

The patient has anterior uveitis. Treatment should be with local steroids and a dilator to

break adhesions to the lens. Examples of pupil dilators are cyclopentolate and atropine.



[ Q: 1635 ] MRCPass -  
Ophthalmology

A 25 year old man has an illness which is associated with visual impairment.

*Which of the following may be associated with optic atrophy?*

- 1- Anti GBM antibodies
- 2- Red Ragged fibres on muscle biopsy
- 3- Iron deposition on liver biopsy
- 4- Anti Thyroid antibodies
- 5- Anti Acetylcholinesterase antibodies

**Answer & Comments**

**Answer:** 2- Red Ragged fibres on muscle biopsy

Most mitochondrial myopathies do have ragged red fibers on the muscle biopsy. Examples are Kearns Sayre disease, MELAS, MERRF and Leber's optic atrophy. Kearns Sayre's disease and Lebers are associated with optic atrophy.



[ Q: 1636 ] MRCPass -  
Ophthalmology

A 60 year old man is referred by a GP with visual loss. The patient has noticed a gradual deterioration in his vision over the last 3 months. Examination shows cupping of the optic disc and intraocular pressure of 32 mmHg.

*What is the diagnosis?*

- 1- Kearns Sayre's disease
- 2- Cataract
- 3- Glaucoma
- 4- Episcleritis
- 5- Optic neuritis

## Answer &amp; Comments

**Answer:** 3- Glaucoma

Chronic (open angle) glaucoma is characterised by a triad of:

- Visual field loss - typically initially supranasal, but gradually extending
- Pathological cupping of the optic disc
- Raised intraocular pressure (>24 mmHg)



[ Q: 1637 ] MRCPass -  
Ophthalmology

A 60 year old man is referred by a GP with visual loss. The patient has noticed a gradual deterioration in his vision over the last 3 months. Examination shows cupping of the optic disc and intraocular pressure of 32 mmHg.

*What is the diagnosis?*

- 1- Kearns Sayre's disease
- 2- Cataract
- 3- Glaucoma
- 4- Episcleritis
- 5- Optic neuritis

## Answer &amp; Comments

**Answer:** 3- Glaucoma

Chronic (open angle) glaucoma is characterised by a triad of:

- Visual field loss - typically initially supranasal, but gradually extending
- Pathological cupping of the optic disc
- Raised intraocular pressure (>24 mmHg)



[ Q: 1638 ] MRCPass -  
Ophthalmology

A 70 year old man gives a history of visual loss affecting his right eye which lasted for approximately 2 minutes.

*Which of the following arteries, if diseased, is most likely to be the cause of his symptoms?*

- 1- Anterior Cerebral
- 2- Basilar
- 3- Internal Carotid
- 4- Middle cerebral
- 5- Vertebral

## Answer &amp; Comments

**Answer:** 3- Internal Carotid

The clinical scenario is amaurosis fugax. Patients complain of a painless loss of part of their vision lasting for a few minutes. This is most commonly caused by emboli from the carotid artery.



[ Q: 1639 ] MRCPass -  
Ophthalmology

A 50 year old man is seen annually at the diabetic clinic. During one appointment, he feels that vision has deteriorated somewhat.

*Which one of the following fundoscopic features, requires a referral for ophthalmological assessment?*

- 1- Blot haemorrhages
- 2- Dot haemorrhages
- 3- New vessel formation
- 4- Microaneurysms
- 5- Hard exudates

## Answer &amp; Comments

**Answer:** 3- New vessel formation

The following are graded features of diabetic retinopathy:

Background - Micro aneurysms, dot and blot haemorrhages, hard exudates  
Pre-proliferative - Cotton wool spots, venous and arteriolar changes in vessels, large haemorrhages  
Proliferative - New vessel formation  
Pre-proliferative retinopathy

requires ophthalmological assessment for early signs of proliferative retinopathy.



[ Q: 1640 ] MRCPass -  
Ophthalmology

A tall 30 year old man has upward dislocation of lens on examination of his left eye.

*Which disease is he most likely to have?*

- 1- Homocystinuria
- 2- Marfan's syndrome
- 3- Myotonic dystrophy
- 4- Ehlers-Danlos syndrome
- 5- Pseudoxanthoma elasticum

#### Answer & Comments

Answer: 2- Marfan's syndrome

Upward lens dislocation occurs in Marfan's syndrome. downward dislocation is commoner in homocystinuria.



[ Q: 1641 ] MRCPass -  
Ophthalmology

A 50 year old woman presents with a unilateral painful red eye associated with blurred vision, photophobia and watering. On examination there are keratitic precipitates and pupillary irregularity.

*What is this clinical picture consistent with?*

- 1- Ectropion
- 2- Acute closed angle glaucoma
- 3- Anterior uveitis
- 4- Posterior uveitis
- 5- Retinitis pigmentosa

#### Answer & Comments

Answer: 3- Anterior uveitis

The clinical features suggest anterior uveitis. Causes are :

Still's disease

Reiters'syndrome

Ankylosing spondylitis

Behcet's disease

Sarcoidosis

Tuberculosis

Leprosy

Syphilis



[ Q: 1642 ] MRCPass -  
Ophthalmology

A 30 year old woman is unable to see the peripheral part of the vision.

*Which one of the following causes peripheral visual loss?*

- 1- Papilloedema
- 2- Hereditary familial optic atrophy
- 3- Syphilitic optic atrophy
- 4- Retinitis pigmentosa
- 5- Retrobulbar neuritis

#### Answer & Comments

Answer: 4- Retinitis pigmentosa

Retinitis pigmentosa causes peripheral visual loss (tunnel vision).

Central Scotoma causes are:

- Hereditary familial optic atrophy
- Syphilitic optic atrophy
- Papilloedema
- Retrobulbar neuritis



[ Q: 1643 ] MRCPass -  
Ophthalmology

A 30 year old diabetic patient has intermittent blurring of vision.

*What is the likely cause?*

- 1- Maculopathy
- 2- Cataract
- 3- Neovascularisation
- 4- Refractory changes in the lens
- 5- Vitreous haemorrhage

#### Answer & Comments

**Answer:** 4- Refractory changes in the lens

Hyperglycaemia can cause refractory changes in the lens, which is most likely to cause blurred vision which is intermittent.



[ Q: 1644 ] MRCPass -  
Ophthalmology

A 66 year old man has a dilated left pupil, left sided ptosis and limited movement consistent with a third nerve palsy.

*Which one of the following is the likely cause?*

- 1- Motor neuron disease
- 2- Crohn's disease
- 3- Wilson's disease
- 4- Aneurysm of the posterior communicating artery
- 5- Cluster headache

#### Answer & Comments

**Answer:** 4- Aneurysm of the posterior communicating artery

IIIrd nerve palsy is caused by aneurysm of the posterior communicating artery. Ophthalmic migraine is a rare cause of IIIrd nerve palsy.



[ Q: 1645 ] MRCPass -  
Ophthalmology

A 65 year old man suddenly loses all vision in one eye. It begins to improve 15 minutes later and is normal by 3 hours.

*The most likely diagnosis is:*

- 1- Retinitis pigmentosa
- 2- Vitreous haemorrhage
- 3- Retinal arterial occlusion
- 4- Retinal detachment
- 5- Retinal vein occlusion

#### Answer & Comments

**Answer:** 3- Retinal arterial occlusion

Complete unilateral loss of vision, even if only in part of the field of vision, is likely to be due to an arterial event. This can be in the retina, either amaurosis fugax or a with a CVA.

Retinal transient ischaemic attacks are usually brief (<30 mins) and almost always due to an embolic event, most typically from the ipsilateral carotid bifurcation. Occlusion of the retinal vein can present acutely, although not as abruptly as an arterial event, and the loss of vision is not transient.



[ Q: 1646 ] MRCPass -  
Ophthalmology

A 35 year old woman with blurred vision and pain in her right eye. Examination of the cornea with fluorescein reveals a branching ulcer.

*What is the most likely diagnosis?*

- 1- Herpes zoster ophthalmicus

- 2- Herpes simplex keratitis
- 3- Conjunctivitis
- 4- Anterior uveitis
- 5- Scleritis

#### Answer & Comments

**Answer:** 2- Herpes simplex keratitis

Keratitis (corneal inflammation) can result from a wide variety of infections.

Inflammatory cell infiltration and oedema results in photophobia, pain and impaired visual acuity with localised

corneal opacity. Permanent blindness can occur if treatment is delayed. Herpes simplex infection causes a characteristic branching (dendritic) ulcer that may be seen with fluorescein or rose bengal. Treatment is with topical acyclovir.



[ Q: 1647 ] MRCPass -  
Ophthalmology

A 40 year old woman is referred for assessment of a painful right eye which has been progressive over a week.

On examination she has a mild ptosis of the right eye. She was aware of diplopia and had vertical image separation on looking upwards. She also had weakness of elevation of right eye.

*Which of the following is the likely diagnosis?*

- 1- Neurosyphilis
- 2- Myasthenia Gravis
- 3- Cavernous sinus thrombosis
- 4- Sphenoid sinusitis
- 5- Posterior communicating artery aneurysm

#### Answer & Comments

**Answer:** 5- Posterior communicating artery aneurysm

The signs are consistent a partial 3rd nerve palsy associated with periorbital pain. In a young person a posterior communicating artery aneurysm is a likely cause.

It is important to realise that frequently a III nerve palsy is incomplete so the extent that individual clinical features is seen may vary with the following features:

Ptosis

Loss of upward, downward and medial movement of the affected eye

Lifting the eyelid reveals a divergent strabismus and a dilated non-reactive pupil

The eye is in a 'down and out' position

Painful oculomotor palsy (pupil generally involved) can be caused by:

1) Compression

Intracranial aneurysm, Uncal herniation, Tumours (e.g. carcinomatous lesions of the skull base, parasellar neoplasms), Epidermoid cyst, Granuloma (Tolosa-Hunt, Sarcoid)

2) Infection

Meningitis, Encephalitis, Herpes zoster

3) Vascular disease

SLE, Temporal arteritis, Ophthalmoplegic Migraine, Dural cavernous sinus fistula

4) Infiltration

Leptomeningeal carcinoma, Neurofibroma

5) Demyelination

6) Trauma



[ Q: 1648 ] MRCPass -  
Ophthalmology

*In diabetic involvement of the eye, which one of the following can result in visual impairment?*

- 1- Lipaemia retinalis



- 2- Rubeosis iridis
- 3- Glaucoma
- 4- Retinitis Pigmentosa
- 5- Drusen

#### Answer & Comments

Answer: 2- Rubeosis iridis

Retinal detachment, cataract, rubeosis iridis and retinal vein occlusion are diabetic eye involvement manifestations. Lipaemia retinalis is the milky appearance of retinal vessels in patients with hypertriglyceridaemia. It does not cause impaired vision.



[ Q: 1649 ] MRCPass -  
Ophthalmology

A 45 year old woman presents with a 24 to 48-hour history of a red and aching eye with photophobia. Vision in that eye is blurred, but acuity is not significantly affected. On examination there is sediment at the bottom of the anterior chamber (hypopyon).

*What is the diagnosis?*

- 1- Scleritis
- 2- Keratitis
- 3- Iritis
- 4- Conjunctivitis
- 5- Episcleritis

#### Answer & Comments

Answer: 3- Iritis

Iritis typically presents with symptoms of a red, aching eye with photophobia, which tends to worsen over hours to a few days. Vision may be blurred, but acuity is not severely affected.

The pupil tends to be small and may be irregular. Hypopyon is an accumulation of inflammatory cells in the anterior chamber

that produces a layered meniscus in the inferior anterior chamber. It can accompany severe iritis.

Iritis is associated with ankylosing spondylitis, Reiter syndrome, sarcoidosis, inflammatory bowel disease, and psoriasis.



[ Q: 1650 ] MRCPass -  
Ophthalmology

A 35 year old Afro-Caribbean woman presents with a history of fatigue, widespread joint pains and shortness of breath with a dry cough. Her ears and sinuses have been normal, but she mentions that she has recently attended the local eye casualty department with a painful, photophobic red eye. This was successfully treated with Maxidex drops hourly during the day and night.

*The most likely diagnosis is:*

- 1- Sarcoidosis
- 2- Ankylosing spondylitis
- 3- Wegener's granulomatosis
- 4- Ulcerative colitis
- 5- Rheumatoid arthritis

#### Answer & Comments

Answer: 1- Sarcoidosis

The presentation of a painful red eye, especially with photophobia, and treatment with frequent and potent topical corticosteroid (Maxidex is dexamethasone 0.1%) together with pupillary dilatation, strongly suggests a slit-lamp diagnosis of acute iritis (anterior uveitis).

Common causes of iritis are:

- Ankylosing spondylitis
- Reiter's syndrome
- Inflammatory bowel disease
- Sarcoidosis

The history and background is suggestive of sarcoidosis.

Wegener's granulomatosis may account for the non-specific systemic features, but uveitis is a much less common association than acute scleritis.



[ Q: 1651 ] MRCPass -  
Ophthalmology

A 65 year old diabetic woman complains that her reading vision has become distorted in one eye and the image appears smaller than with the other eye. She has been diabetic for 20 years. Her glycaemic control has been moderate for a long time. She does not smoke.

*What is the diagnosis?*

- 1- Proliferative diabetic retinopathy
- 2- Complication of oral hypoglycaemics
- 3- Cataract
- 4- Diabetic maculopathy
- 5- Retinal artery occlusion

#### Answer & Comments

Answer: 4- Diabetic maculopathy

Symptoms visual distortion and small images (micropsia) are typical of diabetic maculopathy, but not typical of proliferative retinopathy. The underlying pathology is due to photoreceptors within the deeper layers of the retina become irregularly spaced.



[ Q: 1652 ] MRCPass -  
Ophthalmology

A 20 year old man with learning difficulties is brought for review by his worried parents after he complained of visual blurring. Examination with a slit lamp reveals ectopia lentis.

*What is the most likely diagnosis?*

- 1- Marfan's syndrome

2- Klinefelter's syndrome

3- Ehler Danlos

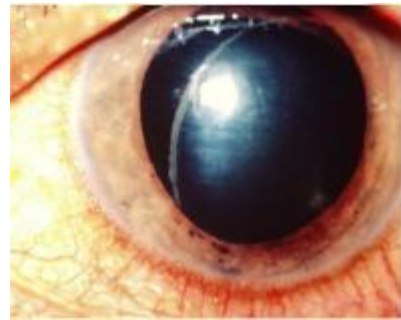
4- Homocystinuria

5- Fragile X syndrome

#### Answer & Comments

Answer: 4- Homocystinuria

Ectopia lentis/ subluxation of the lens is associated with Ehlers Danlos syndrome, Marfan's syndrome and homocystinuria. There is downwards lens dislocation in homocystinuria. It is also more likely to be associated with learning difficulties than Marfan's syndrome.



Lens Dislocation



[ Q: 1653 ] MRCPass -  
Ophthalmology

A 60 year man with a history of Diabetes Mellitus and hypertension attends an eye clinic. On fundoscopy he is diagnosed to have preproliferative diabetic retinopathy.

*Which of the following is characteristic of preproliferative diabetic retinopathy?*

- 1- Microaneurysms
- 2- Hard Exudates
- 3- New vessels formation
- 4- Macular Odema
- 5- Venous Beading

#### Answer & Comments

Answer: 5- Venous Beading

The stages of diabetic retinopathy are background, preproliferative, proliferative and end-stage. Microaneurysms, hard exudates and macular oedema suggest background diabetic retinopathy. Venous beading, soft exudates and cotton wool spots are associated with preproliferative diabetic retinopathy.



[ Q: 1654 ] MRCPass -  
Ophthalmology

A 45 year old man presents to the ophthalmologist with an acute history of pain and blurring in the right eye.

Examination reveals a visual acuity of 6/36 in right eye and 6/6 in left eye. There is a central scotoma in the right eye, and a swollen optic disc on the right.

*What is the diagnosis?*

- 1- Pituitary tumour
- 2- Cavernous sinus thrombosis
- 3- Optic neuritis
- 4- Retinal haemorrhage
- 5- Retinal vein occlusion

#### Answer & Comments

Answer: 3- Optic neuritis

The acute presentation of central scotoma, reduced visual acuity, a swollen optic disc is likely to be due to optic neuritis. This is a common visual presentation of a patient with multiple sclerosis.



[ Q: 1655 ] MRCPass -  
Ophthalmology

A 40 year old woman with type 1 diabetes mellitus presents for assessment.

*Which one of the following features on fundoscopy requires an urgent referral to an ophthalmologist?*

- 1- Pigmentation

- 2- Hard exudates in macular region
- 3- Soft exudates
- 4- Asteroid bodies
- 5- Microaneurysms

#### Answer & Comments

Answer: 2- Hard exudates in macular region

Urgent referral to an ophthalmologist (seen within one week) is required if there is proliferative retinopathy or if there evidence of clinically significant macular oedema (hard exudates at fovea). Microaneurysms signify background diabetic retinopathy and soft exudates signify preproliferative retinopathy.



[ Q: 1656 ] MRCPass -  
Ophthalmology

A 50 year old man has a painful right eye.

*Which ONE of following diagnoses is associated acute iritis?*

- 1- Colorectal Cancer
- 2- Pseudoxanthoma elasticum
- 3- Psoriatic arthropathy
- 4- Keratoconus
- 5- Refsum's disease

#### Answer & Comments

Answer: 3- Psoriatic arthropathy

Iritis is associated with conditions such as Reiter's syndrome, Behcet's disease, Psoriatic arthropathy (about 20%) and inflammatory bowel disease.



[ Q: 1657 ] MRCPass -  
Ophthalmology

A 55 year old man with diabetes finds that the vision in one eye is blurred when he reads, but not at other times.

*The most likely diagnosis is:*

- 1- Retinal haemorrhage
- 2- Glaucoma
- 3- Macular oedema
- 4- Cataract
- 5- Optic neuritis

#### Answer & Comments

Answer: 3- Macular oedema

The macula is the area of retina surrounding fovea. It is responsible for most vision.

Visual impairment more marked for reading than distance is very suggestive of macular disease, and the likely cause of symptoms in this case is diabetic maculopathy, when the central fovea becomes affected by retinal oedema or frank hard exudate. Cystic macular oedema (CME) occurs commonly after eye surgery and is also called Irvine-glass syndrome.



[ Q: 1658 ] MRCPass - Ophthalmology

A 20 year old girl presents with a three week history of headache and horizontal diplopia on far right lateral gaze.

On two separate occasions she noted dimmed vision whilst bending forwards. Over the last year she had gained 12 kilograms in weight. On examination, her weight was 100 kg and height 160 cm. Neurological examination reveals bilateral papilloedema and a partial right sixth cranial nerve palsy.

*What is the likely diagnosis?*

- 1- Multiple sclerosis
- 2- Craniopharyngioma
- 3- Graves eye disease
- 4- Benign intracranial hypertension
- 5- Sagittal vein thrombosis

#### Answer & Comments

Answer: 4- Benign intracranial hypertension

The history of a lady with high BMI and papilloedema is consistent with benign intracranial hypertension. Vision may be affected with enlargement of blind spot and there are visual obscuration with movements which provoke a rise in intracranial pressure (eg. bending).



[ Q: 1659 ] MRCPass - Ophthalmology

A 45 year old patient has small unreactive pupils.

*Which one of the following causes small pupils?*

- 1- 3rd nerve palsy
- 2- Syphilis
- 3- Retrobulbar neuritis
- 4- Adie syndrome
- 5- Young age

#### Answer & Comments

Answer: 2- Syphilis

Syphilis causes Argyll Robertson pupil - small and irregular pupils which do not react to light because they are already small. [mnemonic: ARP: Accomodation Reflex Present, PRA: Pupillary Reflex Absent]

Dilated pupils occur in 3rd nerve palsy and Holmes Adie pupil. Holmes Adie is also called a myotonic pupil due to the slow reaction and is associated with diminished tendon reflexes.



[ Q: 1660 ] MRCPass - Ophthalmology

A 55 year old woman presents with a 5 hour history of severe pain over her left eye, associated with loss of vision. Examination

reveals an oval, partly dilated unreactive pupil with hyperaemia of the ciliary vessels.

*Which of the following is the likely diagnosis?*

- 1- Pterygium
- 2- Scleritis
- 3- Acute (closed angle) glaucoma
- 4- Grave's ophthalmopathy
- 5- Conjunctivitis

#### Answer & Comments

**Answer:** 3- Acute (closed angle) glaucoma

Acute glaucoma is a medical emergency. It is usually unilateral but the other eye is often affected within a few weeks of initial presentation. The condition progresses over a few hours and if treatment is delayed, permanent blindness may result. Initial management is with intravenous acetazolamide (to reduce aqueous production) and pilocarpine drops (to constrict the pupil and so open the angle of the anterior chamber). Definitive treatment is with surgical iridectomy or laser iridotomy.



[ Q: 1661 ] MRCPass - Ophthalmology

A 70 year lady who a history of anxiety presents with a 2 day history of severe left temporal headache radiating from eye scalp. She had also experienced discomfort during eating.

*Which one of following drugs should be given this patient while awaiting diagnostic tests?*

- 1- Prednisolone
- 2- Diazepam
- 3- Sumatriptan
- 4- Ibuprofen
- 5- Carbamazepine

#### Answer & Comments

**Answer:** 1- Prednisolone

The history suggests temporal arteritis (TA). Vision loss is an important finding. About one fifth of patients with TA and vision loss have no systemic symptoms of TA. Treatment of patients with TA is critical to avoid vision loss, and therapy should be initiated based on clinical suspicion, not biopsy results. The initial prednisolone dosage should be between 60 to 100 mg per day. Usually, steroid therapy can be discontinued within one year, although some patients need prednisone therapy for years.

An American College of Rheumatology study determined that highly sensitive parameters for diagnosis of TA are:

- age more than 50 years
- an ESR of more than 50 mm per hour
- an abnormal temporal artery biopsy



[ Q: 1662 ] MRCPass - Ophthalmology

A 60 year old man presents with a six week history of blurring of vision. His investigations show a fasting plasma glucose of 15.

*What is the likely cause of his blurred vision?*

- 1- Osmotic changes in the lens
- 2- Maculopathy
- 3- Retinal artery thrombosis
- 4- Cataract
- 5- Proliferative diabetic retinopathy

#### Answer & Comments

**Answer:** 1- Osmotic changes in the lens

The patient is a new ly diagnosed diabetic and hence proliferative retinopathy is unlikely. Retinal artery thrombosis would cause very sudden onset symptoms. With this history,

osmotic changes due to hyperglycaemia is most likely to cause the visual symptoms.



[ Q: 1663 ] MRCPass - Ophthalmology

A 35 year old woman develops an acutely painful left red eye which woke her from sleep. She is not on any medications. On examination, her left eye appears red and is watering profusely. Visual acuity is reduced to 6/18 in the left eye, but is normal in the right. The pupil is contracted on the left side with a reduced light reflex. The lens appears cloudy and the iris appears hyperaemic.

*What is the most likely cause of her red eye?*

- 1- Maculopathy
- 2- Conjunctivitis
- 3- Acute iridocyclitis
- 4- Acute glaucoma
- 5- Corneal ulceration

#### Answer & Comments

Answer: 3- Acute iridocyclitis

Iridocyclitis, also known as anterior uveitis, is a condition in which the uvea of the eye is inflamed. Diagnosis of iridocyclitis is suggested by the acute painful red eye, abnormal iris, contracted pupil and reduced light reflex. It can be effectively treated with tropicamide or steroids.



[ Q: 1664 ] MRCPass - Ophthalmology

A 50 year old man was diagnosed with hypertension 10 years ago. He has symptoms of some blurred vision since 1 week ago and is assessed at the eye clinic.

*Which of the following fundoscopic features suggest a diagnosis of grade IV hypertensive retinopathy?*

- 1- New vessel formation

- 2- Swollen discs
- 3- Arterio-venous nipping
- 4- Haemorrhages
- 5- Cotton Wool spots

#### Answer & Comments

Answer: 2- Swollen discs

Grading of Hypertensive Retinopathy can be done as follows:

- I - Arteriolar Attenuation
- II - AV nipping
- III - Cotton wool spots and haemorrhages
- IV - Disc Swelling (papilloedema)



[ Q: 1665 ] MRCPass - Ophthalmology

A 35 year old woman reports that vision in her right eye has become blurred over a few days. Her right eye also feels painful. Examination reveals relative afferent papillary defect.

*The most likely diagnosis is:*

- 1- Ischaemic optic neuritis
- 2- Retinal detachment
- 3- Retinal haemorrhage
- 4- Foveal oedema
- 5- Demyelinating optic neuritis

#### Answer & Comments

Answer: 5- Demyelinating optic neuritis

Painful symptoms would fit with optic neuritis. Reduced visual acuity (to variable degree), relative afferent papillary defect and fundoscopy may reveal a swollen optic nerve disc.





[ Q: 1666 ] MRCPass - Ophthalmology

A 46 year old man with no previous visual problems presents with an acute, severely painful red eye.

*What is the likely cause?*

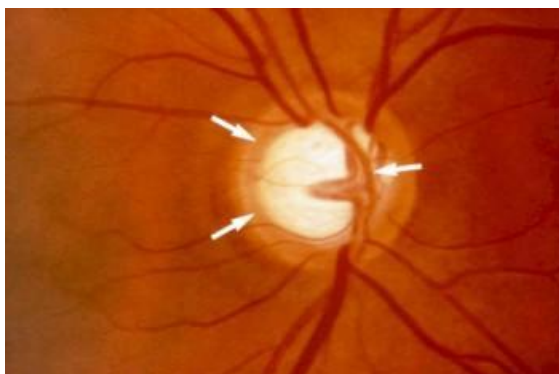
- 1- Optic neuritis
- 2- Optic atrophy
- 3- Retinal detachment
- 4- Vitreous haemorrhage
- 5- Angle closure glaucoma

#### Answer & Comments

Answer: 5- Angle closure glaucoma

Acute closed-angle glaucoma is an ocular emergency that requires immediate diagnosis and treatment to prevent permanent visual impairment and to relieve pain. There is sudden onset of blurred vision, eye pain and redness. There is elevated intraocular pressure of 40-80 mm Hg (normal <25 mmHg).

Topical beta-adrenergic antagonists such as timolol and betaxolol decrease aqueous production. The carbonic anhydrase inhibitor, acetazolamide, also decreases aqueous production. A drop of pilocarpine 2-4% every 15 minutes for the first 1-2 hours helps to facilitate aqueous outflow .



Fundoscopy in glaucoma showing increased cup to disc ratio



[ Q: 1667 ] MRCPass - Ophthalmology

A 65 year old miopic woman presents with severe pain and reduced vision in her left eye. She also reports seeing 'haloes' around most objects. On examination, the eye is inflamed, the pupil is dilated and acuity is markedly reduced.

*Which of the following is the most appropriate test?*

- 1- MRI brain
- 2- CT orbits
- 3- Intraocular pressure measurement
- 4- Lumbar puncture and CSF pressure
- 5- Schirmer's test

#### Answer & Comments

Answer: 3- Intraocular pressure measurement

The diagnosis is primary angle closure glaucoma (acute).

The condition affects females more than males and long-sighted patients are more affected. There may be abrupt increases in intraocular pressure, with watering of the eye and loss of vision. Symptoms of eye pain, nausea and abdominal pain, reduced visual acuity, red eye and cloudy cornea can occur. The pupil may be oval, fixed and dilated.

Treatment is with medical therapy (acetazolamide, pilocarpine and betablockers) followed by iridectomy.



[ Q: 1668 ] MRCPass - Ophthalmology

A 45 year old man reports that his vision has gradually become blurred, especially in the right eye. He is finding it difficult to read, even in bright light, and has great difficulty when driving at night because of glare from oncoming headlights. He had a renal

transplant 10 years ago and has been on low dose maintenance immunosuppression and antihypertensives. His mother also had renal failure and glaucoma.

*What is the diagnosis?*

- 1- Cataract
- 2- Glaucoma
- 3- Scleritis
- 4- Retinitis pigmentosa
- 5- Visual impairment related to renal failure

#### Answer & Comments

Answer: 1- Cataract

Cataract is relatively common in renal transplant patients, as risk factors include renal failure and long-term systemic corticosteroid medication. The symptoms are when vision becomes worse in bright light when the pupil constricts, confining the light path to the central part of the lens where it is thickest. This patient may have steroid induced cataract.

Retinitis pigmentosa (RP) can occur in some types of renal failure, especially Alport's syndrome, associated with deafness and a positive family history. The main symptom in RP is poor night vision. Glare is less typical and symptoms are progressive from a relatively early age. Glaucoma causes gradual loss of visual field and is rarely symptomatic in middle age.



[ Q: 1669 ] MRCPass - Ophthalmology

A 45 year old woman visits her GP with a 12 month history of headaches. These are intermittent and occur when she has problems with her vision. The GP has noticed that her right pupil is larger than the left. The right eye has very slow reaction to light and did not completely constrict. The rest of the neurological examination is normal except

that her reflexes are all diminished. Her eye movements are normal and there is no ptosis.

*What is the most likely cause of the pupillary abnormality?*

- 1- Right third cranial nerve palsy caused by posterior communicating artery aneurysm
- 2- Argyll-Robertson pupil on the left
- 3- Physiological state
- 4- Left sided Horner's syndrome
- 5- Holmes-Adie pupil on the right

#### Answer & Comments

Answer: 5- Holmes-Adie pupil on the right

There is very slow reaction and incomplete reaction to light and sluggish accommodation. Once the pupil has constricted it remains small for an abnormally long time (tonic pupil). The presence of diminished reflexes make this diagnosis the most likely. Headache is not a common part of the syndrome, but could be due to problems with vision.

Argyll-Robertson pupils are small, fail to react to light, constrict with near vision (accommodation), and are usually bilateral. The Argyll Robertson pupil has become a rare diagnostic sign of neurosyphilis.

There are no additional features to suggest a third cranial nerve palsy, and absence of ptosis makes Horner's syndrome unlikely.





## [ Q: 1670 ] MRCPass - Psychiatry

A 35 year old patient has been taking drugs for a psychiatric disorder. She is brought in by a flatmate, having had an episode where her eyes rolled back in the head and the tongue protruded involuntarily.

*Which might be the medication causing this?*

- 1- Procyclidine
- 2- Olanzapine
- 3- Haloperidol
- 4- Diazepam
- 5- Levetiracetam

## Answer &amp; Comments

Answer: 3- Haloperidol

The patient has an oculogyric crisis. Oculogyric Crisis usually occurs as a side effect of neuroleptic drug treatment. It is one of the acute dystonic reactions. It is the most common of the ocular dystonic reactions (which include blepharospasm, periorbital twitches, and protracted staring episodes).

Causes or triggering factors in oculogyric crisis include: neuroleptics, benzodiazepines, carbamazepine, chloroquine, cisplatin, influenza vaccine, levodopa, lithium, metoclopramide, nifedipine, tricyclics.



## [ Q: 1671 ] MRCPass - Psychiatry

A 40 year old man was working as a soldier in a war 10 years ago and has previously been tortured. He is having nightmares and mood swings.

*Which of the following features is most suggestive of post traumatic stress disorder?*

- 1- Onset usually about 3 months after the event
- 2- More common in older men
- 3- Replaying a traumatic scene in his mind
- 4- Low incidence in Europe

- 5- Predisposing mental illness

## Answer &amp; Comments

Answer: 3- Replaying a traumatic scene in his mind

Post traumatic stress disorder is a delayed and/or protracted response to an exceptionally stressful event. Symptoms include episodes of reliving the trauma, avoidance behaviour, persistent numbness, detachment from people.



## [ Q: 1672 ] MRCPass - Psychiatry

A 30 year woman complains of chest pains and abdominal pains. On presentation to the hospital she is found to have numerous crusted, linear lesions on her forearms. A dermatology consultation was arranged, and a skin biopsy subsequently turned out to be normal.

*What is the likely diagnosis?*

- 1- Scleroderma
- 2- Hereditary haemorrhagic telangiectasia
- 3- Schizophrenia
- 4- Factitious disorder
- 5- Depression

## Answer &amp; Comments

Answer: 4- Factitious disorder

Dermatitis artefacta is a condition in which skin lesions are solely produced or inflicted by the patient's own actions. This usually occurs as a result or manifestation of a psychological problem. It could be a form of emotional release in situations of distress or part of an attention seeking behaviour.

In very rare cases there may be an underlying attempt to secure an insurance claim. The rash described is consistent with dermatitis artefacta. The crusted lesions on forearms

suggest artefact as this the commonest site of the lesions.



[ Q: 1673 ] MRCPass - Psychiatry

A 35 year old homeless man presents with tonic clonic seizures to the hospital. He says that he is epileptic, but his GP surgery and hospital has no record of this. He also says he takes phenytoin but the plasma levels were unmeasurable. He was admitted for several days and further investigations of CT and EEG were normal.

*What is the diagnosis?*

- 1- Anxiety disorder
- 2- Malingering
- 3- Hypochondriasis
- 4- Somatisation
- 5- Korsakoff's psychosis

Answer & Comments

Answer: 2- Malingering

There is a difference between malingering and Munchausen's syndrome.

Malingering patients have a clear secondary gain, whilst there is no convincing secondary gain in Munchausen's syndrome (occasionally said to be due to attention seeking behaviour).



[ Q: 1674 ] MRCPass - Psychiatry

A 55 year old man has suffered bereavement of his family member 8 months ago. He continues to be constantly tearful and depressed.

*What is the most appropriate management?*

- 1- Give tricyclic antidepressants
- 2- Assess for clinical depression and suicide risk
- 3- Assess for schizophrenia
- 4- Reassure that he will get over it

5- Sleeping tablets

Answer & Comments

Answer: 2- Assess for clinical depression and suicide risk

Depression is relatively common among patients with chronic illnesses but can also occur following bereavement. A history to identify symptoms of clinical depression is important, as well as assessment of suicide risk. Antidepressants can be prescribed once the diagnosis is firm.



[ Q: 1675 ] MRCPass - Psychiatry

A 35 year old lady has been depressed and is brought to the hospital by a friend after slashing her wrists.

*Which of the following is a predictor that she may make a fatal suicide attempt?*

- 1- Depressed relative
- 2- Personality disorder
- 3- Female sex
- 4- Younger age group
- 5- A boyfriend who does not care

Answer & Comments

Answer: 2- Personality disorder

The characteristics of patients who are likely to have repeated or successful suicide attempts are: male sex, age of 45 more, drugs, alcohol, personality disorder, living alone (divorced or widowed), criminal record, previous history of psychiatric treatment, lower social class and unemployment.



[ Q: 1676 ] MRCPass - Psychiatry

A 25 year old biology student is referred by her GP with possible UTI and confusion. However, she has no new urinary symptoms. Her MTS score is 10 /10 but she has difficulty answering questions directly.

Her friend describes her as a very pleasant character who is very sociable in the pub. Recently, her friend said she had become quite disinhibited and said she was going to become a millionaire as soon as she started work. She did. However, she got annoyed easily when her friends questioned how she was going to achieve this.

*What is the diagnosis?*

- 1- Korsakoff's psychosis
- 2- Hypomania
- 3- Anxiety disorder
- 4- Depressive psychosis
- 5- Somatisation

#### Answer & Comments

Answer: 2- Hypomania

Persistent mood elevation with occasional irritability is typical of hypomania. There is distinct period of persistently elevated, expansive, or irritable mood, sometimes lasting several days, that is clearly different from the usual non depressed mood.

The clinical features of mania reflect a marked elevation of mood, characterized by euphoria, overactivity and disinhibition. Hypomania is the mild form of mania. Hypomania lasts a shorter time and is less severe, with no psychotic features and less disability. Hypomania can be distinguished from normal happiness by its persistence, non-reactivity (not provoked by good news and not affected by bad news) and social disability.



[ Q: 1677 ] MRCPass - Psychiatry

A 75 year old man with history of stroke with residual right hemiparesis has become acutely confused. He is agitated and is trying to attack any nursing staff who are looking after him.

*What should be prescribed?*

- 1- Diazepam

- 2- Carbamazepine
- 3- Haloperidol
- 4- Chlorpromazine
- 5- Thioridazine

#### Answer & Comments

Answer: 1- Diazepam

Oral or subcutaneous diazepam can be given to the patient to reduce the agitation and violence, as this is likely to be a form of delirium. It is short acting, hence a longer acting sedating agent such as haloperidol may be necessary second line.



[ Q: 1678 ] MRCPass - Psychiatry

A 45 year old man has taken an overdose of 25 diazepam tablets. He is assessed by the psychiatrist for risk for future suicide.

*Which of the following indicates a high risk?*

- 1- Overdose with alcohol
- 2- Overdose with easily obtainable drugs
- 3- Making plans before an overdose
- 4- Previous overdoses
- 5- Unemployed

#### Answer & Comments

Answer: 3- Making plans before an overdose

Suicide intent is stronger in patients who plan for the suicide. The more specific the plan, the more serious the intent, for example - a will, or giving things away.



[ Q: 1679 ] MRCPass - Psychiatry

A 45 year old lady has been depressed for about year. She has early morning waking, anhedonia and difficulty sleeping. A diagnosis of clinical depression is made.



*Which of the following forms of therapy is recommended?*

- 1- Psychoanalysis
- 2- Family counselling
- 3- Transactional analysis
- 4- Cognitive behavioural therapy
- 5- Dynamic counselling

#### Answer & Comments

**Answer:** 4- Cognitive behavioural therapy

Cognitive behavioural therapy is likely to be effective in moderate clinical depression.



#### [ Q: 1680 ] MRCPass - Psychiatry

A 30 year old woman is 28 weeks pregnant. She is brought into hospital for assessment of recurrent vomiting.

She mentions that she has eaten very little over several weeks. Examination reveals MMSE score of 23/30 and

temporal disorientation, but registration is intact. Recall was very poor.

*What diagnosis is likely?*

- 1- Korsakoff's syndrome
- 2- Parietal lobe syndrome
- 3- Frontal lobe syndrome
- 4- Creutzfeldt jakob disease
- 5- Alzheimer's disease

#### Answer & Comments

**Answer:** 4- Creutzfeldt jakob disease

The clinical context would fit for thiamine deficiency related to hyperemesis gravidarum, leading to Wernicke's Encephalopathy (WE). This can develop after just a few weeks of vomiting.

Women may present with the classic triad of symptoms, visual disturbances, confusion and muscular weakness.

Early intervention with thiamine replacement is typically all that is needed to prevent this complication.



#### [ Q: 1681 ] MRCPass - Psychiatry

A 70 year old woman has become increasingly confused over the past few months. She is commonly disorientated.

*Which one of the following is the most likely feature of Alzheimer's disease?*

- 1- Depression
- 2- Paranoid delusion
- 3- Impaired short term memory
- 4- Diarrhea
- 5- Hallucinations

#### Answer & Comments

**Answer:** 3- Impaired short term memory

Alzheimer's disease is typified by short term memory loss which is progressive.

There is also inability to formulate plans and aphasia.



#### [ Q: 1682 ] MRCPass - Psychiatry

A 50 year old man is complaining of strange experiences over the past year. The patient hears his own thoughts being spoken aloud and, as a consequence, other people are able to hear his thoughts as well.

*Which of the following would suggest a psychotic disorder?*

- 1- Derealisation
- 2- Hypnagogic hallucination
- 3- Left right disorientation
- 4- Thought broadcast
- 5- Depersonalisation

#### Answer & Comments

**Answer:** 4- Thought broadcast

Thought broadcast is an example of thought alienation.

In thought broadcast, the patient's thoughts are either felt to be heard by someone else, or projected (in another media e.g. video or written). This suggests a psychotic disorder.

Other forms of thought alienation are thought withdrawal and thought insertion. Depersonalisation (person feels unreal) and derealisation (environment feels unreal) are present not only in psychotic disorders, but also anxiety states and depression.



[ Q: 1683 ] MRCPass - Psychiatry

A 20 year old university student presents persistent fatigue, myalgia. He has poor concentration in classes and mentions that he is less sociable because he tends to get irritable easily. All this started after a flu like illness 1 year ago. A diagnosis of chronic fatigue syndrome is made.

*What is the best first line management of this patient?*

- 1- Psychoanalysis
- 2- Cognitive behavioural therapy
- 3- Fluoxetine
- 4- Chlorpromazine
- 5- ECT

#### Answer & Comments

Answer: 2- Cognitive behavioural therapy

The criteria for chronic fatigue syndrome are :

- 1) severe chronic fatigue of six months longer duration
- 2) Have four more of following symptoms:  
substantial impairment in short-term memory  
poor concentration  
sore throat  
tender lymph nodes

muscle pain

multi-joint pain without swelling redness

headaches of a new type

pattern severity

unrefreshing sleep

post-exertional malaise lasting more than 24 hours

Low dose antidepressants are used in treatment of CFS, but suggested first line therapy should include cognitive

behavioural therapy.



[ Q: 1684 ] MRCPass - Psychiatry

A 30 year old patient has been found wandering on the street.

The police brought the patient for assessment for suspected delusions and paranoia. The patient is aggressive and wants to leave straightaway.

*What does the Section 5(2) of the Mental Health Act allow a physician to do if mental illness is suspected?*

- 1- Detain a patient for up to 24 hours from A&E
- 2- Detain a patient for up to 48 hours from A&E
- 3- Detain a patient for up to 72 hours from A&E
- 4- Detain a patient for up to 48 hours if they are already being nursed in hospital
- 5- Detain a patient for up to 72 hours if they are already being nursed in hospital

#### Answer & Comments

Answer: 5- Detain a patient for up to 72 hours if they are already being nursed in hospital

Section 5(2) of the Mental Health Act allows a physician or surgeon to detain a patient for up to 72 hours if they are already being nursed in

hospital when they are suspected of, or have a worsening mental illness.



[ Q: 1685 ] MRCPass - Psychiatry

A 66 year old man was found with decreased consciousness. There were some chlorpromazine, diazepam and amitriptyline tablets in his pocket. He also was found with a half empty bottle of whisky.

He had a temperature of 38.2°C, GCS was 13/15 on arrival to A+E. Blood pressure was 170/100 mmHg and there was marked muscle rigidity but normal reflexes and downgoing plantars.

*What is the diagnosis?*

- 1- Bipolar disorder
- 2- Epilepsy
- 3- Narcolepsy
- 4- Catatonic schizophrenia
- 5- Neuroleptic malignant syndrome

#### Answer & Comments

Answer: 5- Neuroleptic malignant syndrome

Neuroleptic Malignant Syndrome is characterized by fever, muscular rigidity, altered mental status, decreased conscious level and autonomic dysfunction.

Although potent neuroleptics (eg, haloperidol, fluphenazine) are more frequently associated with NMS, all antipsychotic agents, typical or atypical, may precipitate the syndrome. For example, these agents are prochlorperazine, promethazine, clozapine and risperidone.



[ Q: 1686 ] MRCPass - Psychiatry

An 17 year old student is very anxious about her A levels. She is feeling dizzy and may vomit several times when the exams come closer to date.

*Which of the following is the best management?*

- 1- Fluoxetine
- 2- Amitriptyline
- 3- ECT
- 4- Counselling
- 5- Diazepam

#### Answer & Comments

Answer: 4- Counselling

There is little evidence of psychiatric illness, the patient has marked anxiety related to a stressful event and counselling should be a useful coping mechanism.



[ Q: 1687 ] MRCPass - Psychiatry

A 60 year old patient has been on an antipsychotic medication for a while. He develops a festinant gait and tremors in his hand.

*Which of the following antipsychotic medications might have this side effect?*

- 1- Risperidone
- 2- Haloperidol
- 3- Olanzapine
- 4- Quetiapine
- 5- Clozapine

#### Answer & Comments

Answer: 2- Haloperidol

All of the above are newer generation antipsychotics. Haloperidol and trifluoperazine are examples of older generation antipsychotics which have parkinsonian side effects.



[ Q: 1688 ] MRCPass - Psychiatry

An elderly patient presents with fluctuating episodes of confusion, attention problems and visual hallucinations.

There is also a history of falls. A diagnosis of Lewy body dementia is suspected. In this patient which type of drug should be avoided?

- 1- Beta blockers
- 2- Neuroleptics
- 3- SSRIs
- 4- Anticonvulsants
- 5- Benzodiazepines

#### Answer & Comments

Answer: 2- Neuroleptics

Among patients with Lewy body dementia, classical neuroleptic drugs (eg haloperidol) have a high risk of causing an extrapyramidal syndrome and increase mortality. Most experts recommend atypical neuroleptics such as risperidone, olanzapine, or clozapine.



#### [ Q: 1689 ] MRCPass - Psychiatry

A 60 year man has drunk 5 pints of beer a day for 20 years. He had no other significant medical history and was not taking any regular medications. He presents with acute confusion and has an MTS score of 5/10 on admission.

*Which of following suggests a diagnosis of Korsakoff's psychosis?*

- 1- Confabulation
- 2- Auditory hallucinations
- 3- Visual hallucinations
- 4- Long term memory loss
- 5- Seizures

#### Answer & Comments

Answer: 1- Confabulation

Korsakoff's psychosis is typically associated with short term memory loss and then confabulation by patient when he is unable to accurately describe something.



#### [ Q: 1690 ] MRCPass - Psychiatry

A 27 year woman complained breathlessness, chest pains and severe abdominal pains. She has previously been abused by a family member. In past 10 years she had investigated for abdominal pains, without any diagnoses.

*What is the likely diagnosis?*

- 1- Depression
- 2- Factitious disorder
- 3- Somatisation disorder
- 4- Anxiety disorder
- 5- Personality disorder

#### Answer & Comments

Answer: 3- Somatisation disorder

Four major somatoform disorders exist: conversion disorder (also known as hysteria), hypochondriasis, somatization disorder, and somatoform pain disorder.

The list of symptoms includes:

PAIN SYMPTOMS (4 or more) in the head, abdomen, back, joints, extremities, chest.

GASTROINTESTINAL SYMPTOMS (2 or more, excluding pain) such as nausea, bloating, vomiting, diarrhea, intolerance of several foods.

SEXUAL SYMPTOMS (at least 1, excluding pain) including indifference to sex, difficulties with erection or ejaculation, irregular menses, excessive menstrual bleeding.

PSEUDONEUROLOGICAL SYMPTOMS (at least 1) including impaired balance or coordination, weak muscles, trouble swallowing, loss of voice, retention of urine, hallucinations, numbness, double vision, blindness, deafness, seizures, amnesia or other dissociative symptoms.



#### [ Q: 1691 ] MRCPass - Psychiatry

A 23 year old woman has had rapid breathing attacks for 2 years. She has associated tingling in her fingers during these episodes which typically last for 5 minutes. She remains aware of her surroundings during the episodes.

*What is the most likely diagnosis?*

- 1- Obsessive compulsive disorder
- 2- Panic attacks
- 3- Schizophrenia
- 4- Dysmorphophobia
- 5- Somatoform disorder

#### Answer & Comments

Answer: 2- Panic attacks

The features of hyperventilation with subsequent paresthesiae in the fingers are typical of panic attacks.



[ Q: 1692 ] MRCPass - Psychiatry

A 50 year old man has been on lithium for bipolar disorder. His psychiatrist thinks that the dose of lithium may be too high due to a certain symptom.

*Which of the following symptoms are a feature of lithium toxicity?*

- 1- Abnormal eye movements
- 2- Abdominal pains
- 3- Breathlessness and ankle oedema
- 4- Tremor and ataxia
- 5- Hallucinations

#### Answer & Comments

Answer: 4- Tremor and ataxia

Common symptoms of lithium toxicity (can occur at levels greater than 1.1 mmol/l) are nausea and vomiting, diarrhoea, disorientation, tremors and ataxia.



[ Q: 1693 ] MRCPass - Psychiatry

A 55 old woman is referred with symptoms of lethargy. Medical investigations did not show any positive results.

She has been diagnosed as having chronic fatigue syndrome.

*What treatment should be commenced?*

- 1- Long rest
- 2- Graded exercise
- 3- Benzodiazepines
- 4- Neuroleptics
- 5- Selective serotonin reuptake inhibitors

#### Answer & Comments

Answer: 2- Graded exercise

Graded exercise programmes and cognitive-behavioural therapy are the only therapies which have been shown to be beneficial in chronic fatigue syndrome.



[ Q: 1694 ] MRCPass - Psychiatry

A 50 year old lady is pacing around the ward a lot and not able to sleep at night. Examination of the woman's mental status revealed labile mood and affect, loud and pressured speech. She did not have any delusional thoughts or hallucinations.

*What is the diagnosis?*

- 1- Schizophrenia
- 2- Personality disorder
- 3- Anxiety disorder
- 4- Mania
- 5- Clinical depression

#### Answer & Comments

Answer: 4- Mania

Pressure of speech and flight of ideas (quick succession of thoughts) occurs in mania. In addition, speech rhyming and clanging (words chosen for sound and not meaning - I ate

food, rude, stood) are also important suggestive features.



[ Q: 1695 ] MRCPass - Psychiatry

A 45 year man was arrested following abnormal behaviour in the streets. He was brought to the hospital for assessment because he was felt to have delusional behaviour, but then had a grand mal seizure during examination.

*What medication might have led to the seizure?*

- 1- Amphetamine
- 2- LSD
- 3- Barbiturate
- 4- Cocaine
- 5- Chlorpromazine

Answer & Comments

Answer: 3- Barbiturate

Barbiturate withdrawal in an habitual abuser a well recognised cause of fits.

Benzodiazepine elevates the level of an inhibitory neurotransmitter, GABA, therefore it serves as a tranquilizer.

Commonly abused barbiturates include amobarbital and pentobarbital.

These drugs depress the respiratory and nervous system functions; and, because abusers rapidly build up a tolerance to the effects of the drug, fatal overdose or coma can easily occur.

Symptoms of withdrawal syndrome appear 12-20 hours after the last dose. They include anxiety, irritability, elevated heart and respiration rate, muscle pains, tremors, confusion, and seizures.



[ Q: 1696 ] MRCPass - Psychiatry

A 45 year old housewife was

referred to the psychiatric outpatient department with a two month history of washing her hands and legs and complaining that ants were crawling over her skin and biting her.

The patient also described the insects as having wings, and crawling in the bathroom. She would spend much time in the bathroom, at times repeatedly throwing water to wash them away, at other times leaving water for them and enjoying watching them drink. She also reported hearing rats scurrying around the house.

Her husband reports that he had never seen any insects or rodents in the house. She had recently become slow and socially withdrawn.

*During further assessment, which of the following is a good prognostic factor?*

- 1- Negative symptoms
- 2- Single
- 3- Male
- 4- Good response to medication
- 5- Poorly socially adjusted

Answer & Comments

Answer: 4- Good response to medication

The diagnosis is likely to be schizophrenia as the patient has hallucinations and delusions.

Negative symptoms (blunted affect, emotional withdrawal, apatheticness, social withdrawal, lack of spontaneity), male, single, poor social adjustment and poor response to medication are all poor prognostic factors in schizophrenia.



[ Q: 1697 ] MRCPass - Psychiatry

A 50 year old man has been involved in a car accident is admitted for assessment.

Since then, he has had memory loss and fatigue. He is told that he may have frontal lobe damage.



*Which of the following might be associated with frontal lobe damage?*

- 1- Left right disorientation
- 2- Homonymous hemianopia
- 3- Dressing apraxia
- 4- Finger agnosia
- 5- Perseverance

#### Answer & Comments

**Answer:** 5- Perseverance

One of the specific behavior deficits following frontal lobe damage is attention disorder, patients showing distractibility and poor attention. They present with poor memory, sometimes referred to as "forgetting to remember." The thinking of patients with frontal lobe injury tends to be concrete, and they may show perseveration and stereotypy of their responses. The perseveration, with inability to switch from one line of thinking to another, leads to difficulties with arithmetic calculations, such as serial sevens or carryover subtraction.

Other features of frontal lobe syndromes include aphasia, reduced activity, particularly a diminution of spontaneous activity, lack of drive, inability to plan ahead, and lack of concern.



[ Q: 1698 ] MRCPass - Psychiatry

A 60 year old lady has reports of increasing social withdrawal, marked apathy towards all activities, hypersomnia, poor appetite, and decreased energy. Her family noted that she had frequently been confusing appointments where she had previously been quite organized and punctual. Mental status exam revealed a woman with depressed mood and blunted affect, who displayed marked slowness of mentation and apathy.

*Which of the following symptoms suggests frontal lobe damage?*

- 1- Perseveration
- 2- Weight loss
- 3- Anhedonia
- 4- Loss of libido
- 5- Early morning waking

#### Answer & Comments

**Answer:** 1- Perseveration

Perseveration occurs in schizophrenia and frontal lobe brain damage. Weight loss,

anhedonia, loss of libido and early morning waking are biological features of depression.

Confusional states, dementia, behavioral and mood disturbances, including irritability, euphoria, or depression, are also encountered in frontal lobe tumors / lesions.



[ Q: 1699 ] MRCPass - Psychiatry

A 65 year old man was admitted unwell and has been diagnosed with a chest infection. On the second day of admission, he becomes acutely confused and threatens to attack another patient.

*Which medication should be used for sedation?*

- 1- Trazadone
- 2- Lorazepam
- 3- Haloperidol
- 4- Clozapine
- 5- Chlorpromazine

#### Answer & Comments

**Answer:** 3- Haloperidol

Haloperidol is longer acting than the benzodiazepines, and is one of the better options for sedation. In addition, caution should be used in a patient with respiratory problems due to the risk of respiratory depression.



## [ Q: 1700 ] MRCPass - Psychiatry

A 45 year old woman has lost her husband in a road traffic accident 8 years ago. She is unable to discuss the event without experiencing intense sadness.

*Which of the following is an abnormal grief reaction?*

- 1- Insomnia
- 2- Poor appetite
- 3- Thoughts of dying
- 4- Feelings of hopelessness, guilt and worthlessness
- 5- Feelings lasting 6 months from the event

## Answer &amp; Comments

Answer: 4- Feelings of hopelessness, guilt and worthlessness

Grief reaction causes symptoms of decrease in appetite, weight loss, ruminations, troubled sleep, distractibility, thoughts about dying, and impaired concentration.

Symptoms last for up to 6 months.

Feelings of hopelessness, guilt and worthlessness may signify depression or abnormal grief reaction. Abnormal grief reactions when symptoms persist for years after and the patient still grieves as if the event was recent.



## [ Q: 1701 ] MRCPass - Psychiatry

A 50 year old man has a constant inclination to arrange all the books in his house, then rearranging it because he is not satisfied it is in the appropriate order. He has insight into the problem but is unable to control his actions.

*What is the diagnosis?*

- 1- Delusional behaviour
- 2- Obsessive compulsive disorder
- 3- Drug abuse

4- Anxiety disorder

5- Transient global amnesia

## Answer &amp; Comments

Answer: 2- Obsessive compulsive disorder

A ritual may reduce anxiety but the behaviour is not classically anxiety driven. An insight into the obsessive behaviour but an inability to control it is typical of obsessive compulsive disorder



## [ Q: 1702 ] MRCPass - Psychiatry

A 25 year old secretary has a history of depression for 2 years. She was brought into casualty by her sister. For a week, she had grandiose delusions, hyperexcitement, pressure of speech and flight of ideas.

*The most likely diagnosis is:*

- 1- Somatization
- 2- Schizophrenia
- 3- Bipolar disorder
- 4- Schizoaffective disorder
- 5- Depressive psychosis

## Answer &amp; Comments

Answer: 3- Bipolar disorder

The features described would fit with mania, and would be most likely in conjunction with bipolar disorder.



## [ Q: 1703 ] MRCPass - Psychiatry

A 40 year male presents to the hospital with multiple episodes of visual hallucinations which last several days. He is also vague and is not aware of much of the activity around him. On examination, the patient is tremulous.

Paranoid psychosis is diagnosed by the junior doctor but the consultant disagrees after seeing results of deranged liver function tests.

*What is the likely diagnosis?*

- 1- Dementia
- 2- Paranoia
- 3- Bipolar disorder
- 4- Alcohol withdrawal
- 5- Drug overdose

**Answer & Comments**

Answer: 4- Alcohol withdrawal

There are hallucinations and also clouding of consciousness. This is suggestive of delirium tremens or alcohol withdrawal. Clouding of consciousness does not occur in dementia. It occurs when the patient is awake and functioning, but has an incomplete or distorted awareness of the environment. It is a higher level of awareness than stupor, in which the awake patient is unaware and unresponsive to the environment.

**[ Q: 1704 ] MRCPass - Psychiatry**

A 55 year old man had an episode where he cycled very hard home after stress at work. He developed an episode of memory loss during which he was able to hold a conversation, but seemed to lose any memory of what happened at work. 6 hours later he was able to recall everything except the episode of memory loss.

*What is the likely diagnosis of this event?*

- 1- Subarachnoid haemorrhage
- 2- Frontal lobe infarct
- 3- Transient global amnesia
- 4- Schizophrenia
- 5- Mania

**Answer & Comments**

Answer: 3- Transient global amnesia

Transient Global Amnesia or TGA is a sudden failure of memory, affecting older adults. The

attack lasts for hours, sometimes a whole day. In many cases (up to a third), TGA is preceded by

physical or emotional stress, rushing around and personal dramas. Sex has frequently been implicated as well.

A person with TGA is disorientated, though physically well. They can think and communicate, but forget what time it is or where they are - responding to something intelligently but after about a minute forgetting. Despite patchy memory loss about the recent past, distant memories remain. The underlying cause is proposed to be vascular insufficiency to the memory areas - hippocampi.

**[ Q: 1705 ] MRCPass - Psychiatry**

A 55 year old lady has presented with chronic knee pain and swelling. She has been examined by a rheumatologist, and along with knee X rays, no pathology was found. She mentions that she is unable to work due to the pain in her knee but is not sure why she gets knee pains despite multiple visits to the doctor without a diagnosis.

*What is the likely problem?*

- 1- Anxiety disorder
- 2- Somatisation
- 3- Dysmorphophobia
- 4- Schizophrenia
- 5- Hypochondriasis

**Answer & Comments**

Answer: 2- Somatisation

Patients with hypochondriasis have a high rate of psychiatric comorbidity.

The core feature of hypochondriasis is not preoccupation with symptoms themselves, but rather the fear or idea of having a serious disease. The fear or idea is based on the

misinterpretation of bodily signs and sensations as evidence of disease.

Somatization disorder is marked by multiple medically unexplained physical, or somatic, symptoms. The somatic complaints must be serious enough to interfere significantly with a person's ability to perform important activities, such as work or family, or lead the person experiencing the symptoms to seek medical treatment. Dysmorphophobia is a psychiatric condition, also termed body dysmorphic disorder. It is characterised by a fixation on an imaginary flaw in the physical appearance (e.g. hair or acne).



[ Q: 1706 ] MRCPass - Psychiatry

A 35 year patient has recently received a new drug for schizophrenia. He presented 3 weeks later with a fever and felt lethargic. His investigations show : Hb 11.5 g/dl, WCC  $2.3 \times 10^9/l$ , Platelets  $122 \times 10^9/l$ .

*Which is likely to be the drug which was commenced?*

- 1- Carbamazepine
- 2- Haloperidol
- 3- Clozapine
- 4- Chlorpromazine
- 5- Thioridazine

#### Answer & Comments

Answer: 3- Clozapine

Clozapine induced agranulocytosis occurs in about 1% to 10% of patient who take clozapine. Patients who have experienced agranulocytosis with prior treatment of clozapine should not receive clozapine again.



[ Q: 1707 ] MRCPass - Psychiatry

A 50 year old lady has had abdominal pains for 2 years, headaches for a year and then the

next year complained of breathlessness. She has not worked since the symptoms started.

She does not have insight that despite multiple negative investigations her symptoms may not be organic. She has had a second opinion and continues to seek a different opinion.

*What is the diagnosis?*

- 1- Somatisation disorder
- 2- Conversion disorder
- 3- Hypochondriacal disorder
- 4- Delusional disorder
- 5- Depression

#### Answer & Comments

Answer: 1- Somatisation disorder

The constant change in symptoms with negative clinical investigation results suggests somatisation. In hypochondriacal disorder the patients concentrate more on a disease e.g. diabetes or migraines, rather than the symptoms.



[ Q: 1708 ] MRCPass - Psychiatry

A 30 year old patient has admitted to having suicide intention to the medical staff on the wards.

*Which one of the following is a worrying feature?*

- 1- Number of tablets overdosed
- 2- Female sex
- 3- Age 30
- 4- Writing a suicide note
- 5- Absence of family history

#### Answer & Comments

Answer: 4- Writing a suicide note

The act of writing a suicide notes indicates planning and intention of suicide (as opposed to impulsive overdose).

Young and old ages, male sex, family history and planning are features of increased risk in deliberate self harm.



[ Q: 1709 ] MRCPass - Psychiatry

A 65 year old man is assessed for cognitive impairment.

His wife mentions that his memory has not been as good lately. He has been leaving the front door open and the cooker on occasionally.

*Which of the following features suggests frontal lobe dysfunction?*

- 1- Impaired long term recall
- 2- Perserveration
- 3- Sensory ataxia
- 4- Finger agnosia
- 5- Astereognosis

#### Answer & Comments

Answer: 2- Perserveration

Perseveration is the act of persisting; continuing or repeating behavior. This can be associated with difficulties in planning or executing action. Frontal lobe changes also include personality change, disinhibition, euphoria and apathy.



[ Q: 1710 ] MRCPass - Psychiatry

A 50 year old woman has been taking lithium for more than 10 years for bipolar disorder.

*Which of the following is a known side effect?*

- 1- Polyuria
- 2- Optic atrophy
- 3- Weight loss
- 4- Raynaud's syndrome

5- Telangiectasia

#### Answer & Comments

Answer: 1- Polyuria

Polyuria and polydipsia, fine tremor of the hands, weight gain, nausea and hypothyroidism are side effects of lithium.



[ Q: 1711 ] MRCPass - Psychiatry

A 55 year old woman with memory loss is considered for a diagnosis of Alzheimer's disease by the psychogeriatrician.

*Which of these is typical of early Alzheimer's disease?*

- 1- Impaired short term memory
- 2- Urinary incontinence
- 3- Seizures
- 4- Cerebellar signs
- 5- Auditory hallucinations

#### Answer & Comments

Answer: 1- Impaired short term memory

Alzheimer's disease is typified early in disease by short term memory loss.



[ Q: 1712 ] MRCPass - Psychiatry

A 21 year old has come to hospital complaining of nausea. She also complains of frequent episodes of restlessness, inability to sleep and also paresthesiae in her hands. There is no relevant past medical history.

*What is the diagnosis?*

- 1- Somatisation
- 2- Conversion disorder
- 3- Personality disorder
- 4- Anxiety disorder
- 5- Post traumatic stress disorder

## Answer &amp; Comments

Answer: 4- Anxiety disorder

Symptoms typically associated with anxiety are :

restlessness or feeling keyed up or on edge

paresthesiae

being easily fatigued

difficulty concentrating or mind going blank

irritability

muscle tension

sleep disturbance



[ Q: 1713 ] MRCPass - Psychiatry

A 35 year old woman contamination obsessions and washing compulsions in the preceding one month.

Preoccupied with thoughts of contamination, she had started spending the majority of time washing herself or cleaning various household items.

She described these thoughts as being her own and recognised them to be "irrational", but she could not resist them.

*Which one of following is true regarding the obsessional neurosis?*

- 1- It starts in the elderly
- 2- There is no risk depression
- 3- There is good insight
- 4- The patients tend to be violent
- 5- Low intelligence is typically associated

## Answer &amp; Comments

Answer: 3- There is good insight

Obsessional neuroses causes rituals or thoughts. Although some of the thoughts may involve trying to hurt others, there is good insight and patients are not typically violent.

The condition starts in early adult life, and is associated with depression.



[ Q: 1714 ] MRCPass - Psychiatry

A 55 year old lady is constantly tired and is off work frequently despite previously having been very conscientious at work. She complains of mild headaches and myalgia. Her sleep pattern was irregular and she found it difficult to sleep at night. She mentions that she gets tired doing very little. Neurological examination is unremarkable.

*What is the diagnosis?*

- 1- Psychotic depression
- 2- Anorexia nervosa
- 3- Anxiety disorder
- 4- Chronic fatigue syndrome
- 5- Schizophrenia

## Answer &amp; Comments

Answer: 4- Chronic fatigue syndrome

Chronic fatigue syndrome is defined as unexplained fatigue of at least six months' duration. 4 of the following symptoms satisfy the criteria:

Joint pain

Ineffective sleep

Tender lymph nodes

Myalgia

Headache

Subjective memory impairment

Postexertional lethargy



[ Q: 1715 ] MRCPass - Psychiatry

A 40 year old accountant has bipolar disorder. He has recently become very talkative and is unable to concentrate at work. Hypomania is diagnosed.



*What is the recommended treatment?*

- 1- ECT
- 2- Lithium
- 3- Olanzapine
- 4- Procyclidine
- 5- Fluoxetine

**Answer & Comments**

Answer: 3- Olanzapine

Lithium is used for prophylaxis in bipolar disorder. Olanzapine or benzodiazepines are more effective during episodes of hypomania.

**[ Q: 1716 ] MRCPass - Psychiatry**

A 40 year old patient is assessed for periods of breathlessness. Although she is a smoker and has early bronchitis. She describes uncontrollable episodes where she has intense fear that she will die. During these episodes she shakes and hyperventilates.

*What is the diagnosis?*

- 1- Panic disorder
- 2- Psychotic depression
- 3- Post traumatic stress disorder
- 4- Somatisation
- 5- Obsessional neurosis

**Answer & Comments**

Answer: 1- Panic disorder

One of the characteristic features of panic disorder is the fear that something drastic is going to happen during an attack, e.g. impending doom. The episode usually lasts for several minutes, and the patient may react with fear or try to escape the situation. A permanent feeling of nervousness suggests generalised anxiety disorder rather than panic disorder.

**[ Q: 1717 ] MRCPass - Psychiatry**

A 55 year old man presents with a 10 day history of confusion. His friend mentions that he drinks 15 units of alcohol a day.

*Which of the following strongly suggests a diagnosis of Korsakoff's psychosis?*

- 1- Absence seizures
- 2- Delusional beliefs
- 3- Poor long term memory
- 4- Inventing recent events
- 5- Auditory hallucinations

**Answer & Comments**

Answer: 4- Inventing recent events

Korsakoff's is typified by associated short term memory loss and confabulation (inventing recent events).

**[ Q: 1718 ] MRCPass - Psychiatry**

A 66 year old man has become more forgetful over the last 12 months.

His wife complains that he does not remember his friends' names and on several occasions has gone for a walk and not found his way back. He is also unsteady on his feet. On examination he has a mask like face and cogwheel rigidity of his upper limbs.

*The most likely diagnosis is:*

- 1- CJD
- 2- NvCJD
- 3- Vascular dementia
- 4- Lewy body dementia
- 5- Alzheimer's disease

**Answer & Comments**

Answer: 4- Lewy body dementia

Lewy body dementia is characterised by fluctuating cognition, visual hallucinations,

parkinsonism, falls, transient loss of consciousness and delusions



[ Q: 1719 ] MRCPass - Psychiatry

A 23 year old man who suffers from schizophrenia has been on chlorpromazine. He complains of gynaecomastia and galactorrhoea.

*In this patient, chlorpromazine could be changed to:*

- 1- Haloperidol
- 2- Quetiapine
- 3- Thioridazine
- 4- Sulpiride
- 5- Risperidone

Answer & Comments

Answer: 2- Quetiapine

Classical antipsychotics increase plasma prolactin concentrations by their blocking action on dopamine receptors in the tuberofundibular pathway. They can cause gynaecomastia and galactorrhoea and menstrual disturbances. A change to an atypical agent such as quetiapine or olanzapine should minimise this effect.



[ Q: 1720 ] MRCPass - Psychiatry

A 25 year old woman constantly washes her hands because of a fear of infection, even at times when she has not touched anything.

*What is the diagnosis?*

- 1- Personality disorder
- 2- Chronic fatigue syndrome
- 3- Depression
- 4- Schizophrenia
- 5- Obsessive compulsive disorder

Answer & Comments

Answer: 5- Obsessive compulsive disorder

The predominant feature of obsessive compulsive disorder is a ritual which is unreasonable, but essentially unstoppable.



[ Q: 1721 ] MRCPass - Psychiatry

A 50 year old man has recently been treated with amitriptyline. His brother brings him to the hospital following an episode where he went to the street telling passersby that he is going to become the King of the country and conquer the world with battles.

On examination, he was euphoric and irritable mood, mild grandiosity, decreased need for sleep, rapid and pressured speech.

*What is the likely diagnosis?*

- 1- Schizophrenia
- 2- Somatization disorder
- 3- Depressive psychosis
- 4- Hypomania
- 5- Anxiety disorder

Answer & Comments

Answer: 4- Hypomania

The features of disinhibition suggest hypomania. The diagnosis is bipolar disorder. A mild to moderate level of mania is called hypomania. Hypomania may feel good to the person who experiences it and may even be associated with good functioning.



[ Q: 1722 ] MRCPass - Psychiatry

A 30 year old patient presents with headache and numbness in her right arm. CT of the head is normal. There were no organisms seen in the CSF and protein is normal.

Upon further enquiry there is a history of sexual abuse.

*What is the probable diagnosis?*

- 1- Clinical depression
- 2- Obsessive compulsive disorder
- 3- Conversion disorder
- 4- Anxiety disorder
- 5- Acute psychosis

**Answer & Comments**

**Answer:** 3- Conversion disorder

Significant stress or emotional conflicts (such as sexual abuse) are the most likely predisposing causes for conversion disorder.

**[ Q: 1723 ] MRCPass - Psychiatry**

A 65 year old man has had clinical depression diagnosed for 10 years. He initially responded to fluoxetine, but now is getting more episodes of depression and is suicidal.

*What is the next best management?*

- 1- Change to paroxetine
- 2- Change to amitriptyline
- 3- ECT
- 4- Allow natural progression
- 5- Dementia tests

**Answer & Comments**

**Answer:** 3- ECT

ECT is indicated in patients who have responded to antidepressant medications before, but may not be responding now .

Severe depression (melancholia) is the most frequent indication for ECT. Patients with this illness experience sadness and despair, have difficulty concentrating, lose appetite and weight, sleep poorly, blame themselves, are unable to enjoy life, and often think of suicide. Mania and schizophrenia are other illnesses that can be helped by ECT.

**[ Q: 1724 ] MRCPass - Psychiatry**

Clozapine is an atypical antipsychotic drug that appears to have fewer problems with adverse effects than older antipsychotics.

*The relative safety of clozapine is due to:*

- 1- Low affinity for 5HT receptors
- 2- Decrease in prolactin levels
- 3- No effect on haematopoiesis
- 4- Low affinity for dopamine D2 receptors
- 5- Causes sinus tachycardia

**Answer & Comments**

**Answer:** 4- Low affinity for dopamine D2 receptors

Clozapine appears to have fewer extrapyramidal adverse effects than older antipsychotics due to its relatively low affinity for D2 dopamine receptors.

Unlike older antipsychotics, clozapine has relatively high affinity for 5HT receptors, and also has little effect on prolactin levels.

Myocarditis and cardiomyopathy have been reported with atypical antipsychotics, and persistent tachycardia is an early warning sign. Agranulocytosis is a well-recognized complication of clozapine, and patients should be supervised under the Clozaril Patient Monitoring Service.

**[ Q: 1725 ] MRCPass - Psychiatry**

A patient with parkinson's disease has recently been commenced on an antipsychotic drug. He has worsening of rigidity and tremors.

*Which of the following is the best antipsychotic drug to prevent such features?*

- 1- Risperidone
- 2- Chlorpromazine
- 3- Thioridazine

4- Haloperidol

5- Clozapine

## Answer &amp; Comments

Answer: 5- Clozapine

Clozapine and quetiapine are newer, atypical antipsychotic drug which does not have parkinsonian side effects as bad as the older generation drugs. This is due to less dopamine receptor antagonism.



[ Q: 1726 ] MRCPass - Psychiatry

A 40 year old lady is brought to hospital by a friend having taken 30 tablets of fluoxetine 20mg all at one time. She was attempting to commit suicide.

*Which of the following would be consistent with this when she is assessed?*

- 1- Heart rate of 100 beats per minute
- 2- Miosis
- 3- Respiratory rate of 20
- 4- QRS duration of 150 ms
- 5- Seizures

## Answer &amp; Comments

Answer: 1- Heart rate of 100 beats per minute

With fluoxetine overdose, most patients are asymptomatic. About 20% of patients may feel drowsy and have a sinus tachycardia.



[ Q: 1727 ] MRCPass - Psychiatry

A 20 year lady referred a year's history of oligomenorrhea. She is currently in university and has reports of poor progress with her work. On examination, she was found to have lanugo hair.

*What is the diagnosis?*

- 1- Polycystic ovary syndrome
- 2- Anorexia nervosa

3- Bulimia

4- Anxiety disorder

5- Depression

## Answer &amp; Comments

Answer: 2- Anorexia nervosa

Lanugo hair is a fine hair that develops on the face, back, or arms and legs. This occurs in anorexia nervosa.



[ Q: 1728 ] MRCPass - Psychiatry

A 50 year old man has a history of alcohol excess, presents with a 2 week history of confusion.

*Which of the following suggests a diagnosis of Korsakoff's psychosis?*

- 1- Visual hallucinations
- 2- Epileptic seizures
- 3- Impaired long term memory
- 4- Delusional beliefs
- 5- Confabulating events

## Answer &amp; Comments

Answer: 5- Confabulating events

The main features of Korsakoff's psychosis is short term memory loss and subsequent compensatory confabulation by patient. Other symptoms may include delirium, anxiety, depression, confusion, delusions and insomnia. The treatment is with intravenous thiamine.





## [ Q: 1729 ] MRCPass - Statistics

A group of 100 patients were involved in a study of clubbing and endocarditis. There were 8 patients with SBE and clubbing, 2 patients with SBE without clubbing. There were 90 patients without SBE and 5 of these patients had clubbing.

*Which of the following is true?*

- 1- Positive predictive value =  $8/(8+2)$
- 2- Negative predictive value =  $85/(85+2)$
- 3- Sensitivity =  $8/(8+5)$
- 4- Sensitivity =  $8/(8+85)$
- 5- Specificity =  $85/(85+2)$

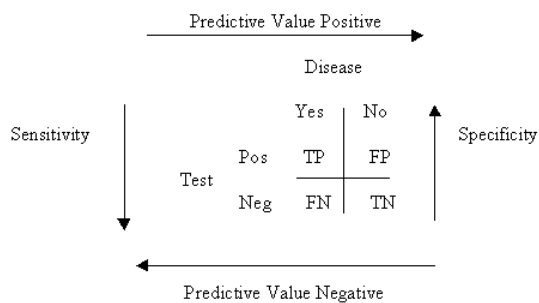
## Answer &amp; Comments

Answer: 2- Negative predictive value =  $85/(85+2)$

This is a good exercise for calculating sensitivity etc. A contingency table for this should be drawn out.

	SBE	No SBE
Clubbing	8	5
No Clubbing	2	85

The total of all patients is 100. PPV =  $8/(8+5)$ . NPV =  $85/(85+2)$ . Sensitivity =  $8/(8+2)$ . Specificity =  $85/(85+5)$ .



## [ Q: 1730 ] MRCPass - Statistics

A study has been performed on preventing lung cancer with a drug Y in a population who smoked. The results of the study showed that over a 5 year period the incidence of lung cancer in the drug Y treated

group was 5% compared to a incidence of 8% in untreated group ( $p < 0.001$ ).

*What is the relative risk reduction?*

- 1- 5%
- 2- 8%
- 3- 3%
- 4- 3/8%
- 5- 5/8%

## Answer &amp; Comments

Answer: 4- 3/8%

The drug reduced the risk from 8% to 5%, hence the relative risk reduction is the difference divided by the original risk ie 3/8%.



## [ Q: 1731 ] MRCPass - Statistics

In a trial of an antiplatelet therapy in secondary prevention of stroke, the drug was shown to reduce mortality from stroke, from 8% to 4% over 10 years.

*What is the number needed to treat to prevent a death over 10 years?*

- 1- 4
- 2- 5
- 3- 10
- 4- 25
- 5- 100

## Answer &amp; Comments

Answer: 4- 25

The drug reduced the risk of death post stroke by 4% over 10 years. Therefore if 100 people were treated we could expect the prevention of 4 deaths.

$$100/\text{Absolute risk reduction} = \text{Number needed to treat}$$





## [ Q: 1732 ] MRCPass - Statistics

A study examines patients with bowel carcinoma. The mortality rate of those given drug R is 7%, compared with 10% in those not given drug R.

*What conclusion can be drawn?*

- 1- The relative risk of death when given drug R is 1.5
- 2- The relative risk of death when given drug R is 7/10
- 3- The number needed to treat to prevent one death is 3
- 4- The number needed to treat to prevent one death is 10
- 5- The absolute risk reduction is 3%

## Answer &amp; Comments

**Answer:** 5- The absolute risk reduction is 3%

The absolute risk reduction is  $10 - 7 = 3\%$ . The relative risk reduction is  $3/10$ . The number needed to treat is  $100/\text{absolute risk reduction}$  which is 33 in this case.

$$100/\text{Absolute risk reduction} = \text{Number needed to treat}$$



## [ Q: 1733 ] MRCPass - Statistics

A surveillance study of a new medication for treatment of cholesterol has been carried out on 1,000 subjects who had completed clinical trials in the postmarketing phase.

*Which of the following shows information generated from this study?*

- 1- Cost-effectiveness
- 2- Efficacy
- 3- Cost benefit analysis
- 4- Effectiveness
- 5- Adverse events

## Answer &amp; Comments

**Answer:** 5- Adverse events

The postmarketing phase is phase IV. In this phase, the potential side effects in the large population is assessed under everyday conditions. Drug potency is usually assessed in phase II, and efficacy assessed in phase III.



## [ Q: 1734 ] MRCPass - Statistics

A treatment has been shown to be of benefit in treating Crohn's disease following a phase II study in patients.

However there were concerns regarding deranged liver function from this treatment in animal studies.

*What study should be conducted ?*

- 1- Case controlled study
- 2- Randomised double blind placebo study
- 3- Metanalysis
- 4- Sequential trial
- 5- Phase I study

## Answer &amp; Comments

**Answer:** 2- Randomised double blind placebo study

The study has already been performed to phase II and hence

should have been shown to be safe in phase I. The next step should be a randomised double blind study to determine whether there would be benefit, and also whether the side effects are significant.



## [ Q: 1735 ] MRCPass - Statistics

*The number needed to treat (NNT) is defined as :*

- 1- 0.5 divided by absolute risk reduction
- 2- 0.5 divided by relative risk reduction
- 3- 100 divided by absolute risk reduction

- 4- 100 divided by relative risk reduction  
 5- The percentage of difference x patient

#### Answer & Comments

Answer: 3- 100 divided by absolute risk reduction

NNT can be calculated by 100 divided by the number for absolute risk reduction, or 1 divided by the percentage of absolute risk reduction.

$$100/\text{Absolute risk reduction} = \text{Number needed to treat}$$



[ Q: 1736 ] MRCPass - Statistics

*Which of the following defines variance?*

- 1- 2x standard deviation  
 2- Square of standard deviation  
 3- Square root of standard deviation  
 4- Half of standard deviation  
 5- Standard deviation divided by number in the population

#### Answer & Comments

Answer: 2- Square of standard deviation

Variance is the square of standard deviation. Standard deviation is the square root of variance.

$$s^2 = \frac{\sum (x - \bar{x})^2}{n}$$

Variance

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n}}$$

Standard Deviation



[ Q: 1737 ] MRCPass - Statistics

A group of investigators studied dizziness as a symptom of CVA. Out of 100 patients, there were 20 patients with dizziness. 10 of these patients had CVA. There were a further 5 patients who did not have dizziness, who had CVA.

*What is the pretest probability?*

- 1- 10/20  
 2- 5/20  
 3- 10/100  
 4- 15/100  
 5- 20/100

#### Answer & Comments

Answer: 4- 15/100

Pretest Probability is defined as the probability of the target disorder before a diagnostic test result is known. This is actually the same as the disease prevalence, in this eg CVA prevalence. Hence (10 + 5)/100 = 15/100.



[ Q: 1738 ] MRCPass - Statistics

The mean Hb value for a group of 150 patients is 15 g/dl. The standard deviation is 2 g/dl.

*Which one of these conclusions is correct?*

- 1- 68% of patients have a Hb between 13 and 17 g/dl  
 2- 95% of patients have a Hb between 13 and 17 g/dl  
 3- 99% of patients have a Hb between 13 and 17 g/dl  
 4- Variance is 2  
 5- Variance is 1

#### Answer & Comments

Answer: 1- 68% of patients have a Hb between 13 and 17 g/dl

68% of patients fall within 1 standard deviation, in this case, 2 less and more than 15. 95% of patients would have a Hb between 11 and 19.

Standard deviation is the square root of variance. Hence variance is 4.

$$s^2 = \frac{\sum (x - \bar{x})^2}{n}$$

Variance

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n}}$$

Standard Deviation



[ Q: 1739 ] MRCPass - Statistics

A letter published in a journal suggests that an established antipsychotic drug may cause photosensitivity. The manufacturer wishes set up a study to determine rapidly and efficiently whether this is true.

*Which one of the following studies is most appropriate?*

- 1- Case control study
- 2- Dose ranging study
- 3- Double blind, randomized, placebo controlled study
- 4- Meta-analysis
- 5- Sequential trial

#### Answer & Comments

**Answer:** 4- Meta-analysis

An established drug should have many trials published on data. Meta-analysis incorporates the data in order to identify effects which some trials may be too small to detect.



[ Q: 1740 ] MRCPass - Statistics

*Which one of the following is correct*

*regarding standard error of the mean (SEM)?*

- 1- SEM estimates how different a median is compared to the population mean
- 2- 75% confidence limits for a mean are the mean +/-1.96 SEM
- 3- SEM would be halved if we doubled the sample size
- 4- SEM would be halved if we quadrupled the sample size
- 5- SEM increases as standard deviation decreases

#### Answer & Comments

**Answer:** 4- SEM would be halved if we quadrupled the sample size

Standard error of the mean estimates how close a study mean is compared to the population mean.

The formula for Standard Error of the Mean = Std Dev/ Square Root of Sample Size. Hence, the SEM would be halved if the sample size were quadrupled.

95% of observations lie 1.96 (or nearest estimate 2) standard deviations away from the mean. SEM increases as the standard deviation increases.

#### Standard error (sem):

The standard error of the mean is designated as:  $\sigma_M$ . It is the standard deviation of the sampling distribution of the mean. The formula for the standard error of the mean is:

$$\sigma_M = \frac{\sigma}{\sqrt{N}}$$

where  $\sigma$  is the standard deviation of the original distribution and  $N$  is the sample size (the number of scores that each mean is based on)



[ Q: 1741 ] MRCPass - Statistics

*Which of these is an example of a nonparametric test?*

- 1- Chi square

- 2- Students t test
- 3- Kaplan Meier analysis
- 4- Wilcoxon rank test
- 5- Correlation coefficient

#### Answer & Comments

Answer: 4- Wilcoxon rank test

The nonparametric tests can be used when distribution is not normal (skewed). The Wilcoxon rank sum test and Mann U Whitney tests are good examples of nonparametric tests. Other examples are the Kruskal-Wallis (KW) test and Friedman's test.



[ Q: 1742 ] MRCPass - Statistics

A publication assesses a tumour marker used to test for ovarian cancer.

*Which of the following would demonstrate the number of cases of ovarian cancer correctly identified by this new test, out of all the ovarian cancer cases?*

- 1- Sensitivity
- 2- Specificity
- 3- Positive predictive value
- 4- Negative predictive value
- 5- Accuracy

#### Answer & Comments

Answer: 1- Sensitivity

The sensitivity assess how many pickups there are with the test, hence the number of cases correctly identified out of all the cases.



[ Q: 1743 ] MRCPass - Statistics

A study compared carotid endarterectomy with medical therapy for stroke prevention over 10 years. There were 15% of patients developing in the medical group, and 10% in the carotid endarterectomy group developing a stroke.

*What is the number needed to treat over 10 years to prevent 1 death?*

- 1- 5
- 2- 10
- 3- 15
- 4- 20
- 5- 25

#### Answer & Comments

Answer: 4- 20

NNT is defined as number needed to treat to prevent 1 death. The way to work this out is  $100 / (15 - 10) = 20$ .

$100 / \text{Absolute risk reduction} = \text{Number needed to treat}$



[ Q: 1744 ] MRCPass - Statistics

A study is conducted measuring body weight and risk of progression towards hypertension.

*Which of following best statistical test to evaluate results?*

- 1- Student's paired t test
- 2- Chi squared test
- 3- Student's unpaired t test
- 4- Coefficient of linear regression
- 5- Log rank test

#### Answer & Comments

Answer: 4- Coefficient of linear regression

In such a study, a plot of weight against hypertension would allow regression analysis.

A coefficient can be obtained to demonstrated how closely associated they are (the closer to a value of 1, the higher the correlation).



## [ Q: 1745 ] MRCPass - Statistics

The sensitivity of a new blood test (Blood Test X) for heart failure has been assessed in heart failure. The test results were compared with echocardiography as a gold standard for the diagnosis of heart failure. The following are the results:

	Heart Failure	No heart failure
X positive	30	10
X negative	5	45

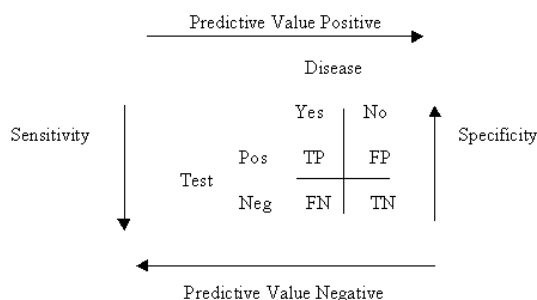
*What is the sensitivity of blood test X?*

- 1- 5/30
- 2- 10/35
- 3- 30/35
- 4- 5/45
- 5- 30/45

## Answer &amp; Comments

Answer: 3- 30/35

The sensitivity is the number of positive pick ups out of all those who had the condition. Taking into account patients with heart failure, 30 patients had Blood test X positive and 5 patients had Blood test X negative. Hence sensitivity (expressed in %) of Blood Test X is 30/35.



## [ Q: 1746 ] MRCPass - Statistics

A randomised double blind controlled study of a blood pressure lowering drug assessed its effect on myocardial infarction. The follow up period was 10 years.

There a 10% risk of myocardial infarction in the group receiving the drug and 20% risk of MI in the placebo group.

*What number of patients are required to prevent one myocardial infarction?*

- 1- 1
- 2- 5
- 3- 10
- 4- 20
- 5- 100

## Answer &amp; Comments

Answer: 3- 10

The absolute risk reduction is 10% and the relative risk reduction is 0.5.

The number needed to treat is 100 divided by the absolute risk reduction.

This would be 100/10 which is 10.



## [ Q: 1747 ] MRCPass - Statistics

A set of data has been collected for treatment for breast cancer as follows :

	Survived	Not Survived
With Drug	25	32
Without Drug	20	18

*Which is the best form of analysis?*

- 1- Students' t test
- 2- Chi square test
- 3- Pearson's correlation
- 4- Survival analysis
- 5- Kendall's test

## Answer &amp; Comments

Answer: 2- Chi square test

This is a 2x2 contingency table. A statistics calculator can be used to obtain a p value with the chi square test to determine if the treatment has made a significant difference.



## [ Q: 1748 ] MRCPass - Statistics

A new blood test for pulmonary embolism has a sensitivity of 99% and a specificity of 20%. It has a positive predictive value of 30% and a negative predictive value of 40%.

*A test with these characteristics would be inappropriate in which conditions?*

- 1- Screening many patients to identify for CTPA
- 2- Screening in A+E, to admit all patients who are positive for blood test
- 3- Screening in A+E and discharging all patients who are negative
- 4- Screening in circumstances which symptoms are suggestive but confirming with a VQ scan
- 5- Telling patients with a positive blood test they may have PE but it is not a definitive test

## Answer &amp; Comments

Answer: 3- Screening in A+E and discharging all patients who are negative

The test has a high pick up rate or sensitivity, but is not specific enough to exclude PE. Hence patients who have a positive test should have a second test such as VQ or CTPA to confirm the diagnosis. PE cannot be safely excluded unless the negative predictive value is high.



## [ Q: 1749 ] MRCPass - Statistics

A group of Turner's syndrome patients have their heights measured in a study.

*Which of the following gives a good estimate of the spread of heights?*

- 1- Standard deviation
- 2- Mean
- 3- Mode

4- Median

5- Standard error of mean

## Answer &amp; Comments

Answer: 1- Standard deviation

The standard deviation would give the best estimate of a spread of a measurement about the mean, in this case, height.



## [ Q: 1750 ] MRCPass - Statistics

In a study for a new drug, a researcher wants to compare the concentration of the drug at rest, and after exercise in several subjects.

*Which of the following tests is appropriate to assess for a difference?*

- 1- Pearson's correlation coefficient
- 2- Paired t test
- 3- Chi square test
- 4- Wilcoxon rank test
- 5- Unpaired t test

## Answer &amp; Comments

Answer: 2- Paired t test

The drug is assessed with the same volunteers but with different conditions. This means that a paired t test can be used.



## [ Q: 1751 ] MRCPass - Statistics

A nationwide cross-sectional survey was conducted to compare the prevalence of asthma symptoms among high school students who have smoked compared to those who have not smoked.

*Which one of the following tests is best used to compare its prevalence?*

- 1- Mann Whitney test
- 2- Logistic regression analysis
- 3- Spearman's correlation



4- Chi square test

5- Kaplan Meier curve

#### Answer & Comments

Answer: 4- Chi square test

In order to compare the prevalence in two groups, the chi square test is most appropriate.



[ Q: 1752 ] MRCPass - Statistics

A new genetic test for Marfan's syndrome has recently been tested.

*Which of the following can test for the number of patients who would be identified by the test?*

- 1- Positive predictive value
- 2- Negative predictive value
- 3- Variation
- 4- Sensitivity
- 5- Specificity

#### Answer & Comments

Answer: 4- Sensitivity

The sensitivity of a test is the proportion of people with the disease who have a positive test result. The higher the sensitivity, the greater the detection rate.



[ Q: 1753 ] MRCPass - Statistics

A new diagnostic blood test for pulmonary embolus has been described. Out of all patients tested negative, *which parameter measures the true numbers of patient who do not have pulmonary embolus?*

- 1- Positive predictive value
- 2- Negative predictive value
- 3- Sensitivity
- 4- Specificity
- 5- Odds ratio

#### Answer & Comments

Answer: 2- Negative predictive value

The negative predictive value tells us the proportion of individuals who test negative who do not have a target condition.



[ Q: 1754 ] MRCPass - Statistics

The frequency of attendance of a 100 medical students at lectures were recorded by an observer over a 3 month period. The students were then assessed at the end with a multiple choice exam with a test score marked out of a hundred.

*Which of these statistical methods is best used to analyse the effectiveness of frequency of attendance on higher test scores?*

- 1- Mann-Whitney test
- 2- Spearmann correlation
- 3- Chi square test
- 4- Fisher's exact test
- 5- Student's t test

#### Answer & Comments

Answer: 2- Spearmann correlation

Spearmann's correlation is the best method to determine two variables which do not follow a normal distribution.



[ Q: 1755 ] MRCPass - Statistics

A randomised, double blind, placebo controlled trial of an asthma drug has been performed. 1000 subjects are treated with active drug and 1000 are treated with placebo. They are followed up over a five year period. 200 individuals in placebo group 150 in treatment group had hospitalisation due to asthma.

*What is the annual percentage relative risk reduction of asthma hospitalisation in the treatment group as compared to the placebo group?*

- 1- 2.5%
- 2- 5%
- 3- 10%
- 4- 25%
- 5- 50%

### Answer & Comments

**Answer:** 2- 5%

The absolute risk reduction is 50 and the relative risk reduction is 50/200, which is 25%. However, the annual percentage is required, hence divided by 5, it is 5%.



### [ Q: 1756 ] MRCPass - Statistics

In a survey of 100 patients, 30 had ascites of which 25 had alcoholic cirrhosis. 10 other patients who had no ascites did have alcoholic cirrhosis.

*Which of the following is correct?*

- 1- Positive predictive value is 25/(25+5)
- 2- Positive predictive value is 25/(25+10)
- 3- Sensitivity is 25/(25+5)
- 4- Specificity is 25/(25+5)
- 5- Specificity is 5/(25+5)

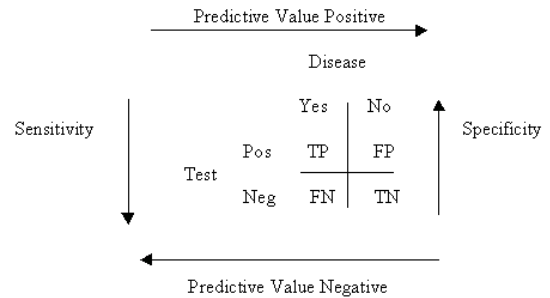
### Answer & Comments

**Answer:** 1- Positive predictive value is 25/(25+5)

The table created should show :

	Cirrhosis	No cirrhosis
With Drug	25	5
Without Drug	10	60

PPV is the the no of patients with ascites confirmed cirrhosis / total no of patients with ascites, hence 25/(25+5).



### [ Q: 1757 ] MRCPass - Statistics

A statistician wants to compare the significance of cholesterol levels in a group of 200 patients before and after treatment with a new drug.

*What is the most appropriate statistical test?*

- 1- Logistic regression analysis
- 2- Paired t test
- 3- Chi square test
- 4- Kaplan meier curve
- 5- Likelihood ratios

### Answer & Comments

**Answer:** 2- Paired t test

In a clinical trial where the input variable is type of treatment - a nominal variable - and the outcome may be some clinical measure which is normally distributed, the required test is then the T-test. The paired t-test and the Wilcoxon signed-rank test are often conducted to compare two continuous outcomes from paired observations. An assumption underlying these tests is that the responses from pair to pair are mutually independent.



### [ Q: 1758 ] MRCPass - Statistics

*Which test is the best of the following, to compare two groups of categorical data, e.g. developed MI/ did not develop MI when a drug or placebo is given?*

- 1- Pearson's correlation coefficient
- 2- Students t test

- 3- Chi square test
- 4- Wilcoxon rank test
- 5- Multivariate analysis

#### Answer & Comments

**Answer:** 3- Chi square test

Chi-squared tests are used to compare percentages or proportions of categorical data. Data such as the above can be organised into a 2x2 contingency table. From the chi-squared value a p value is read off a statistical table (depends on degree of freedom) to give the degree of significance.

Normally distributed data can be compared with a Student's t-test. Skewed continuous data can be compared with a Wilcoxon rank-sum test or a Mann-Whitney U-test.



[ Q: 1759 ] MRCPass - Statistics

There have been many small reports showing that a drug used to treat cancer also caused hypertension.

*Which of the following studies would provide rapid information regarding this fact?*

- 1- Case control study
- 2- Metanalysis
- 3- Double blind trial
- 4- A review article
- 5- Sequential trial

#### Answer & Comments

**Answer:** 2- Metanalysis

Metanalysis can be performed when there are several small studies, the study would take into account all the data from the studies and provide good estimate whether an effect was present. This would also be quicker and more cost effective than performing a double blind randomised trial.



[ Q: 1760 ] MRCPass - Statistics

200 patients were in a study of intelligence. Mean IQ scores was 150 and standard deviation was 15.

*What is the coefficient of variation?*

- 1- 5%
- 2- 10%
- 3- 15%
- 4- Square root of 15%
- 5- 20%

#### Answer & Comments

**Answer:** 2- 10%

Coefficient of variation is expressed in %. The definition coefficient of variation  $V = SD/\text{mean}$ .

In this example  $15/150 = 10\%$ . It is a statistical measure of the deviation of a variable from its mean.



[ Q: 1761 ] MRCPass - Statistics

A new drug for inflammatory bow el disease has been released. The 5 year mortality rate with the treatment is 50% and without the treatment it is 60%.

*The absolute risk reduction is :*

- 1- 5%
- 2- 10%
- 3- 16%
- 4- 20%
- 5- 25%

#### Answer & Comments

**Answer:** 2- 10%

The relative risk reduction is 10% of 60% (ie without the treatment) which is 16%. The absolute risk reduction is 60 - 50% which is 10%.



## [ Q: 1762 ] MRCPass - Statistics

A blood test for screening heart failure has been introduced. Out of 300 patients, 100 were found to have heart failure with echocardiography. When the blood test is used, 80 patients were found to have heart failure. 70 of these patients had heart failure confirmed with echocardiography but 10 did not.

*Which is the positive predictive value of the blood test?*

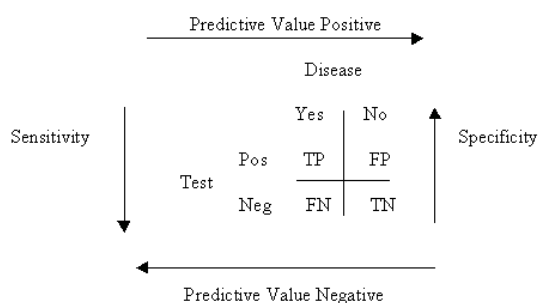
- 1- 10/80
- 2- 70/80
- 3- 70/100
- 4- 80/100
- 5- 70/300

## Answer &amp; Comments

**Answer:** 2- 70/80

The positive predictive value of the number of true positives (70) out of the positives (80) detected by blood test. In this case, sensitivity would be the number of positives detected by the blood test (70) out of the true number of positives (100).

	Echo shows HF	Echo does not show HF
Blood test positive	70	10
Blood test negative	30	190



## [ Q: 1763 ] MRCPass - Statistics

A professor wants to use the students t test to analyse data from a population.

*Which of these features would make the test inapplicable?*

- 1- Normal distribution
- 2- Parametric distribution
- 3- Large standard error
- 4- Large standard deviation
- 5- Skewed distribution

## Answer &amp; Comments

**Answer:** 5- Skewed distribution

Parametric tests make the assumption that the data are normally distributed. The students t test is parametric, hence it assumes normal distribution, and cannot be applied if the distribution is not normal or skewed.



## [ Q: 1764 ] MRCPass - Statistics

A study of implantable cardiac defibrillators (ICD) against 'no treatment' reports that there is 5 year mortality due to ventricular arrhythmias of 2% in the ICD group compared to 4% in the 'no treatment' group. There was a 50% reduction in cardiac deaths on treatment.

*What does 50% represent?*

- 1- Absolute risk reduction
- 2- Relative risk reduction
- 3- Control event rate
- 4- Experimental event rate
- 5- Mortality rate

## Answer &amp; Comments

**Answer:** 2- Relative risk reduction

The relative risk reduction in this case is 2/4 which can be expressed as 50% or 0.5. The

absolute risk reduction is 2%. The control event rate is 4% and experimental event rate is 2%.



[ Q: 1765 ] MRCPass - Statistics

*Which of the following describes a type 1 statistical error in a clinical trial ?*

- 1- The null hypothesis is falsely accepted
- 2- The null hypothesis is falsely rejected
- 3- A significant value was not achieved
- 4- Patients were not randomised
- 5- The hypothesis was not true

#### Answer & Comments

**Answer:** 2- The null hypothesis is falsely rejected

The null hypothesis claims that there is no difference between two treatments. A type 1 error is defined as the null hypothesis being falsely rejected. In practice this means that the study claims to find a difference that does not really exist.

HYPOTHESIS TESTING OUTCOMES		Reality	
		The Null Hypothesis Is True	The Alternative Hypothesis is True
Researcher	The Null Hypothesis Is True	Accurate $1 - \alpha$ 	Type II Error $\beta$ 
	The Alternative Hypothesis is True	Type I Error $\alpha$ 	Accurate $1 - \beta$ 



[ Q: 1766 ] MRCPass - Statistics

A study investigates whether a certain drug A is better alone with the addition of drug B for ulcerative colitis.

*After randomizing the patients, a few patients on both drug A+B drop out due to side effects. How should the data be analysed?*

- 1- Exclude the patients from statistical analysis

- 2- Assume that the patients did not drop out
- 3- Include these patient outcomes in the drug A+B group
- 4- Recruit more patients in the A+B group
- 5- Analyse the two groups separately

#### Answer & Comments

**Answer:** 3- Include these patient outcomes in the drug A+B group

The analysis of patients dropping out of a study should take into account the adverse effects of a drug (in this case drug B) causing drop out. Hence even though patients have dropped out, the 'intention to treat' principle requires the patients to be analysed even if they did not receive the treatment.



[ Q: 1767 ] MRCPass - Statistics

A researcher is trying to design a study to find out the cause of a rare tropical disease among Pima Indians in South America. It is not known whether this disease is caused by an infection or whether it is inherited.

*What study design is most appropriate?*

- 1- Cross sectional
- 2- Case control
- 3- Prospective cohort
- 4- Double blind placebo
- 5- Randomised controlled

#### Answer & Comments

**Answer:** 2- Case control

With rare diseases and exposures, case control studies are the best option. Although cohort studies are good for rare exposures, they are not good for rare diseases.



[ Q: 1768 ] MRCPass - Statistics

A new drug has been shown to reduce mortality from ovarian cancer from

20% to 10% in 10 years when compared to the current chemotherapy used. The cost of this new drug is £100 per year.

*How much extra would a hospital need to spend to prevent one death in 10 years?*

- 1- £20,000
- 2- £10,000
- 3- £2000
- 4- £1000
- 5- £100

#### Answer & Comments

**Answer:** 2- £10,000

The absolute risk reduction is 10%. The number needed to treat is  $100/10$  which is 10 patients to prevent one death in 10 years. 10 patients in 10 years would cost  $£100 \times 10$  patients  $\times 10$  years which is £10,000.



[ Q: 1769 ] MRCPass - Statistics

A proposal is being made for a study to assess the effect of stress on coronary artery thrombosis.

*Which of the following is the best study?*

- 1- Cross over study
- 2- Case control study
- 3- Randomised trial
- 4- Cohort study
- 5- Population study

#### Answer & Comments

**Answer:** 2- Case control study

In assessing for common risk factors, case control studies are better than cohort studies.



[ Q: 1770 ] MRCPass - Statistics

A study of a drug on a certain disease, is in the first stage of selecting patients.

*Which of these conditions would ensure adequate randomisation?*

- 1- Selection from a tertiary hospital
- 2- A sample of healthy volunteers
- 3- Only patients who agree to the study
- 4- Relatives of a family with the disease
- 5- Stratified random sample

#### Answer & Comments

**Answer:** 5- Stratified random sample

In order to study a certain disease a certain group needs to be identified. In a stratified random sample, groups of interest are identified first, then randomisation occurs within those groups need to be performed. An example of this is in a randomised controlled trial, is to stratify the groups into separate age groups before randomising the patients. This allows the study to see whether the results are different according to the ages.



[ Q: 1771 ] MRCPass - Statistics

A blood test is being evaluated for measuring the likelihood of heart failure (HF), as compared to echocardiography as a gold standard. In the study, the following results are obtained.

	Blood test positive	negative
Echo - has HF	720	10
Echo - no HF	30	890

*What is the negative predictive value of the blood test?*

- 1- 30/750
- 2- 30/750
- 3- 890/900
- 4- 890/10
- 5- 890/30

#### Answer & Comments

**Answer:** 3- 890/900



Negative predictive value is the number of true negatives found by a negative blood test, in this case,  $890 / (890 + 10)$ .



[ Q: 1772 ] MRCPass - Statistics

Cholesterol tests were performed on 200 patients with either type I or type II diabetes.

*Which method of analysis would best identify whether there was a difference in the two groups of patients?*

- 1- Chi square test
- 2- Paired students t test
- 3- Correlation coefficient
- 4- Mann U Whitney test
- 5- Kaplan Meier curves

#### Answer & Comments

Answer: 2- Paired students t test

The paired students t test can be used to compare two groups of patients with parametric data (Null hypothesis being that any difference is due to chance). Parametric means that it meets certain requirements with respect to parameters of the population (for example, the data will be normal - the distribution parallels the normal or bell curve). In addition, it means that numbers can be added, subtracted, multiplied, and divided.



[ Q: 1773 ] MRCPass - Statistics

*Which of the following correctly describes a 95% confidence interval?*

- 1- There is a 95% chance that the value is statistically significant
- 2- There is a 95% chance that the true value falls within the confidence interval
- 3- There is a 95% chance that the p value is  $<0.05$
- 4- There is a 95% chance that the standard error is correct

- 5- There is a 95% chance of variability

#### Answer & Comments

Answer: 2- There is a 95% chance that the true value falls within the confidence interval

The 95% CI can be used to describe the chance that a value, or difference falls within that interval.



[ Q: 1774 ] MRCPass - Statistics

A study is performed to see if body surface area (BSA) is related to drug concentration. 50 subjects were injected with the same concentration of drug. They also had their BSA measured.

*Which is the most appropriate test to assess for a correlation?*

- 1- Pearson's correlation
- 2- Logistic regression
- 3- Chi square test
- 4- Unpaired t test
- 5- Paired t test

#### Answer & Comments

Answer: 2- Logistic regression

Logistic regression allows one to predict a discrete outcome, such as group membership, from a set of variables that may be continuous, discrete, dichotomous, or a mix of any of these. This would allow us to determine whether one variable is dependent on another, in this case whether drug concentration was dependent on BSA. ANOVA is an example of logistic regression analysis.



[ Q: 1775 ] MRCPass - Statistics

A large study reports that the 10 year risk of mortality due to stroke is 10% on placebo and 5% on a drug called Frenzy. It was concluded that there was a 5% reduction in

mortality from stroke when Frenzy was prescribed.

*Which of these describes the value of 5%?*

- 1- Significance value
- 2- Mortality reduction
- 3- Relative risk reduction
- 4- Absolute risk reduction
- 5- Number needed to treat

#### Answer & Comments

Answer: 4- Absolute risk reduction

In this example, the drug reduces the incidence of stroke from 10% to 5%.

The relative risk reduction (RRR) is 50%.

The absolute risk reduction (ARR) is 5%.

The control event rate (CER) is 10% and the experimental event rate (EER) is 5%.

The number needed to treat (NNT) is  $100\%/5\% = 20$ .



#### [ Q: 1776 ] MRCPass - Statistics

A study is designed to investigate whether a certain drug plus physiotherapy treatment is better than drug treatment alone in the management of juvenile chronic arthritis.

After randomizing the patients, a small proportion of patients in the physiotherapy group decide to drop out of the study.

*What is the correct way of analysing the subsequent data?*

- 1- Record the patients as having successful therapy
- 2- Record the patients as having failed therapy
- 3- Extend the trial recruitment to make up numbers
- 4- Exclude these patients from all analysis

- 5- Include these patient outcomes in the drug plus physiotherapy group

#### Answer & Comments

Answer: 5- Include these patient outcomes in the drug plus physiotherapy group

This is the principle of 'intention to treat'. It is possible that the physiotherapy intervention was unpleasant and hence patients dropped out.

Intention to treat helps to reduce bias by including the data from original allocation of treatment, analyzing the patient in the treatment group even if they did not complete the trial.





[ Q: 1777 ] MRCPass - 2010 January

A 35-year-old man who is known to have bronchiectasis has a chronic cough. A sputum sample is sent from the clinic.

*What organism is most likely to be isolated?*

- 1- Streptococcus pneumoniae
- 2- Klebsiella spp.
- 3- Haemophilus influenzae
- 4- Moraxella
- 5- Pseudomonas aeruginosa

#### Answer & Comments

Answer: 3- Haemophilus influenzae

The organisms found most typically causing ongoing infection in bronchiectasis include Haemophilus species (47-55% of patients) and Pseudomonas species (18-26% of patients)



[ Q: 1778 ] MRCPass - 2010 January

A patient with colorectal cancer has been commenced on a chemotherapy regime with Capecitabine and oxaliplatin following surgery.

*What is the main difference between 5 FU and capecitabine?*

- 1- Capecitabine is used orally
- 2- Capecitabine has a broader indication
- 3- Capecitabine causes peripheral neuropathy
- 4- 5 FU has less side effects
- 5- 5 FU interacts with warfarin

#### Answer & Comments

Answer: 1- Capecitabine is used orally

Capecitabine is the oral equivalent of intravenous 5-FU.

Capecitabine (Xeloda, Roche) is an orally-administered chemotherapeutic agent used in the treatment of metastatic breast and colorectal cancers. It is a prodrug, that is

enzymatically converted to 5-fluorouracil in the tumor, where it inhibits DN synthesis and slows growth of tumor tissue. Pancytopenia, diarrhoea and hand-foot syndrome are main side effects.



[ Q: 1779 ] MRCPass - 2010 January

*Which one of the following is a contraindication to liver biopsy?*

- 1- INR of 1.4
- 2- ALT of 250 u/l
- 3- Platelet count of  $110 \times 10^9/l$
- 4- Obesity with BMI of  $35 \text{ kg/m}^2$
- 5- Biliary duct dilatation on the ultrasound

#### Answer & Comments

Answer: 5- Biliary duct dilatation on the ultrasound

The best answer here is biliary duct dilatation, which increases the risk of infection as there might be cholestasis or cholecystitis.

Many would consider obesity, but it is not an absolute contraindication.

A short list of contraindications to liver biopsy are:

Prolonged ( $>1.6$ ) international normalized ratio (INR)

The platelet count should exceed  $60 \times 10^9/l$

There should be no biliary dilatation or major ascites

Bleeding diathesis (eg, hemophilia)



[ Q: 1780 ] MRCPass - 2010 January

*Which is the most common site for primary cardiac tumours to occur in adults?*

- 1- Right ventricle
- 2- Right atrium
- 3- Left atrial appendage

- 4- Left atrium
- 5- Left ventricle

#### Answer & Comments

Answer: 4- Left atrium

About 75% of atrial myxomas are in the left atrial.

The most common site is the fossa ovalis border in the left atrium.



[ Q: 1781 ] MRCPass - 2010 January

A 45 year old man presents with weight loss and breathlessness. He has a past medical history of heavy alcohol intake and intravenous drug use. On examination, he has right sided signs of reduced air entry in the lung bases.

A CXR shows pleural effusion on the right side. Chest aspiration was attempted by the senior house officer but this was unsuccessful.

*What is the next investigation?*

- 1- Lateral Chest X Ray
- 2- Bronchoscopy
- 3- CT of the chest
- 4- Lung function test
- 5- Ultrasound of the chest

#### Answer & Comments

Answer: 5- Ultrasound of the chest

This patient has a failed aspiration of the chest.

However, he is at high risk of empyema and so priority is still to get an aspirate sample through ultrasound guidance.



[ Q: 1782 ] MRCPass - 2010 January

A 25 year-old man presents with extensive, coalescing, hypopigmented, slightly scaly lesions on his face and the scalp. The

rash had been present for the last 1 year and had gradually become more extensive. He is otherwise well.

*What should be the treatment of choice?*

- 1- Ketoconazole cream
- 2- Nystatin cream
- 3- Metronidazole cream
- 4- Oral terbinafine
- 5- Oral itraconazole

#### Answer & Comments

Answer: 1- Ketoconazole cream

The features are suggestive of Pityriasis versicolor, a skin infection which often presents as patches of relatively depigmented skin.

The cause is overgrowth of the yeast *Malassezia furfur*.

Topical antifungal medications are the treatment of choice for Tinea/ Pityriasis versicolor. The following topical antifungal treatment regimens have been shown to produce a greater than 70% clinical response rate:

2% Ketoconazole cream and ketoconazole shampoo

Selenium sulphide suspension (Selsun shampoo)



[ Q: 1783 ] MRCPass - 2010 January

A 31-year-old man who is known to be HIV positive presents with dyspnoea and a dry cough. His last CD4 count was 150 cells/ $\mu$ l. Clinical examination reveals a respiratory rate of 24 / min. Chest auscultation reveals fine crackles bilaterally. His oxygen saturation is 98% on room air but this desaturates to 85% after walking the length of the ward. A chest x ray shows fine infiltrates in both lower zones.

*What is the most appropriate first-line treatment?*

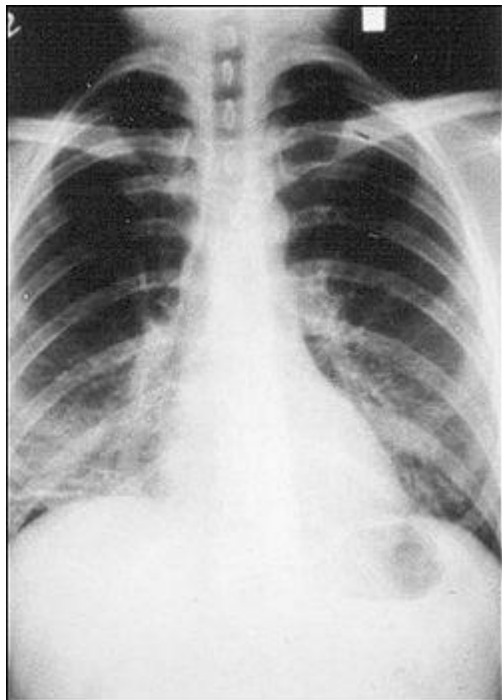
- 1- Fluconazole
- 2- Co-trimoxazole
- 3- Clarithromycin
- 4- Ganciclovir
- 5- Sulfadiazine and pyrimethamine

#### Answer & Comments

**Answer:** 2- Co-trimoxazole

Pneumocystis pneumonia (PCP) is caused by the yeast-like fungus previously classified as a protozoan *Pneumocystis jirovecii*.

The risk of pneumonia due to *Pneumocystis jirovecii* increases when CD4 counts are less than 200 cells/ $\mu$ l.



There is increased opacification in the lower lungs on both sides, characteristic of *Pneumocystis pneumonia*.

Antipneumocystic medication (classically co-trimoxazole) is used with concomitant steroids in order to avoid inflammation.



[ Q: 1784 ] MRCPass - 2010 January

A 55-year-old, unemployed, man was admitted due to confusion and

disorientation with the onset of acute symptoms a few days before admission. He had a history of alcohol dependence of 20 years duration. He was awake but disorientated to person, location, situation, and time.

Temperature was 36.5 C and BP was 120/80 mmHg. Neurological examination revealed gaze-evoked nystagmus in all directions. All deep tendon reflexes were normal. The finger-nose test was ataxic. Standing and gait with open eyes evidenced a distinct ataxia with tremors of the upper extremity. The Romberg sign was positive. He had an MMSE score of 26 /30 on admission. A blood glucose measurement was 3 mmol/l.

**What should be given to treat the patient?**

- 1- 50 ml of 50% dextrose
- 2- 500 mls of 5% dextrose
- 3- Thiamine infusion
- 4- Lactulose
- 5- Chlordiazepoxide

#### Answer & Comments

**Answer:** 3- Thiamine infusion

This patient is exhibiting features of Wernicke's encephalopathy, which are nystagmus, ataxia and confusion.

The daily thiamine requirement for healthy individuals is between 1 and 2 mg/day but both alcohol and malnutrition may interfere with the absorption of thiamine. Thiamine dependent enzymes such as transketolase and pyruvate dehydrogenase are essential for cerebral myelination and thiamine deficiency in alcoholism leads to Wernicke's encephalopathy.

Thiamine should also be supplemented fully in malnourished alcoholics. The administration of intravenous fluids containing glucose without adequate thiamine supplementation in alcoholics could aggravate the thiamine



deficiency leading to irreversible cerebral lesions.



[ Q: 1785 ] MRCPass - 2010 January

A 43 year old man had a cough and his GP organized a chest X ray. This showed a pneumothorax and he was referred to the hospital. He does not have any symptoms of breathlessness or chest pains. His BP was 110/80 mmHg, O2 sats were 99% on air & pulse was 80/min. CXR shows that there is a pneumothorax on the left with a 1 cm margin from the rim.

*Which is the most appropriate step?*

- 1- Chest drain
- 2- Surgical referral
- 3- CT scan of the chest
- 4- Discharge with outpatient follow up
- 5- needle aspiration

#### Answer & Comments

Answer: 4- Discharge with outpatient follow up

The British thoracic society recommends that a small pneumothorax of < 2 cm rim, with no significant symptoms to be managed conservatively (discharge with outpatient review and advise to return if breathlessness occurs).



[ Q: 1786 ] MRCPass - 2010 January

A 60-year-old has developed an inguinal hernia and is keen for surgical repair.

The anaesthetist refers the patient for assessment in outpatients. His history includes a previous who had a drug-eluting stent inserted 6 months ago. His current medication includes aspirin, clopidogrel, atorvastatin, ramipril and bisoprolol. The cardiologists plan was to continue clopidogrel for 12 months following stent insertion.

*What is the most appropriate course of action?*

- 1- Stop clopidogrel the day before the operation
- 2- Stop clopidogrel 1 week before the operation
- 3- Stop clopidogrel the day prior to the operation and start low-molecular weight heparin (prophylaxis dose)
- 4- Continue clopidogrel throughout the perioperative period
- 5- Delay surgery for 6 months

#### Answer & Comments

Answer: 5- Delay surgery for 6 months

There is a risk of stent thrombosis with discontinuing clopidogrel.

For non urgent surgery this should be delayed till a 12 month period on clopidogrel has elapsed. If the patient required urgent surgery e.g. acute abdomen or incarcerated hernia, then the clopidogrel would have to be discontinued prior to surgery, with a discussion between surgeons and cardiologists weighing risks of bleeding during surgery vs stent thrombosis.



[ Q: 1787 ] MRCPass - 2010 January

A 70 year old lady presents with hip pain on the right side. She has a history of hypertension. On examination, she is able to mobilise and has normal flexion and extension of movement of her hip. She is However, tender to the palpation in the right lateral hip.

*What is the likely diagnosis?*

- 1- Osteoarthritis
- 2- Ankylosing spondylitis
- 3- Rheumatoid arthritis
- 4- Trochanteric bursitis
- 5- Fracture of neck of femur

## Answer &amp; Comments

**Answer:** 4- Trochanteric bursitis

Trochanteric bursitis is characterized by painful inflammation of the bursa located just superficial to the greater trochanter of the femur.

Patients typically complain of lateral hip pain, although the hip joint itself is not involved. The pain may radiate down the lateral aspect of the thigh. It may occur with trauma. Rest and physiotherapy are best management options, although steroid injection is an option.



[ Q: 1788 ] MRCPass - 2010 January

A 55-year-old woman is investigated for progressive shortness of breath. On examination a loud P2 is noted associated with a left parasternal heave. An ECG shows evidence of right ventricular strain and a diagnosis of pulmonary hypertension was suspected.

*Which one of the following is the most important test to confirm the diagnosis?*

- 1- High resolution CT thorax
- 2- Chest X Ray
- 3- Echocardiography
- 4- Pulmonary angiography
- 5- Ventilation perfusion scanning

## Answer &amp; Comments

**Answer:** 3- Echocardiography

The tests are all useful, However the best option is echocardiography, which can provide an estimate of pulmonary arterial pressure, identify right ventricular strain and also exclude any congenital heart disease.

Right heart cardiac catheterisation is most accurate as accurate pulmonary arterial pressures can be measured with a transducer,

but was not a given option for this question in the exam.



[ Q: 1789 ] MRCPass - 2010 January

A 40-year-old man who was diagnosed with type 2 diabetes mellitus presents for review in the clinic. His current medication is metformin and gliclazide. His blood results were as follows:

Total cholesterol 5.8 mmol/l

HDL cholesterol 1.2 mmol/l

LDL cholesterol 3.5 mmol/l

Triglyceride 1.7 mmol/l

HbA1c 6.6%

According to recent NICE guidelines, *what is the most appropriate action?*

- 1- Atorvastatin 40mg nocte
- 2- Simvastatin 40mg nocte
- 3- Dietary advice
- 4- Clofibrate
- 5- Nicotinic acid

## Answer &amp; Comments

**Answer:** 2- Simvastatin 40mg nocte

NICE guidelines suggest target lipid levels of 4:2 in diabetic patients (ie. Total cholesterol of < 4 and LDL of < 2). The guidelines also recommend the most cost effective statins to be commenced first (simvastatin £4 per month compared to £40 per month for atorvastatin until it comes off patent which it does in 2010).



[ Q: 1790 ] MRCPass - 2010 January

You are reviewing a patient's urea and electrolyte results. There appears to be a discrepancy between the serum creatinine and the calculated eGFR.

*Which one of the following factors is most likely to explain this discrepancy?*

- 1- Diuretic use
- 2- Pregnancy
- 3- Type 1 diabetes mellitus
- 4- Significant hypertension
- 5- Female gender

#### Answer & Comments

Answer: 2- Pregnancy

When a person's creatinine is stable, an estimated Glomerular filtration rate can be obtained with inputs of creatinine, age, gender and racial origin.

The eGFR estimate may be inaccurate in people over 70 years of age, people less than 18 years old, pregnancy, amputees, malnourishment and dehydration states.



[ Q: 1791 ] MRCPass - 2010 January

A 35 year old man is admitted with fevers, cough and night sweats.

*Which one of the following test results suggests that he needs isolation into a side room in the hospital?*

- 1- Positive sputum culture for TB
- 2- Positive sputum direct smear for TB
- 3- Positive CSF culture for TB
- 4- Positive urine culture for TB
- 5- Positive urine direct smear for TB

#### Answer & Comments

Answer: 2- Positive sputum direct smear for TB

Stained smears of sputum specimens to detect the presence of acid fast bacilli (AFB) are useful diagnostic tools in the management of tuberculosis.

Patients with tuberculosis who have negative sputum smears for AFB are less contagious than patients with positive smears. Patients

with positive direct sputum smears should be isolated in negative pressure rooms.



[ Q: 1792 ] MRCPass - 2010 January

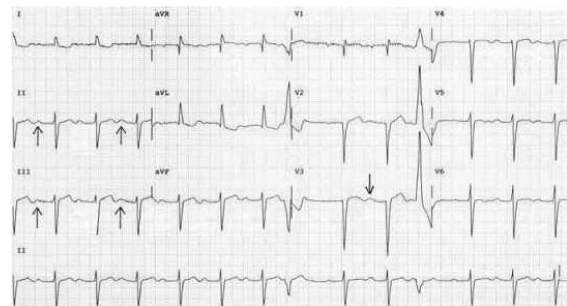
*On the ECG, which one of the following features is seen with significant Hypokalaemia?*

- 1- Flattened p wave
- 2- Flattened t wave
- 3- Prominent u wave
- 4- Prominent j wave
- 5- Prominent r wave

#### Answer & Comments

Answer: 3- Prominent u wave

The prominent U wave is a component seen after a T wave seen in severe Hypokalaemia.



U waves



[ Q: 1793 ] MRCPass - 2010 January

A 40 year old woman has been complaining of polyuria and polydipsia and presents to the clinic for assessment.

Her body mass index (BMI) was 42 kg/m<sup>2</sup>.

A 75g oral glucose tolerance test shows the following results

Time Plasma glucose concentration

0 hour 5.5 mmol/l

2 hour 15 mmol/l

*Which of the following is the appropriate next step in the patient's management?*

- 1- Fasting glucose tolerance test
- 2- Gliclazide
- 3- Subcutaneous insulin
- 4- Diet control
- 5- Metformin

#### Answer & Comments

Answer: 5- Metformin

Metformin is a biguanide drug used in diabetes.

It improves hyperglycemia primarily through its suppression of hepatic glucose production and increases insulin sensitivity. This patient has type 2 diabetes (late onset) is overweight. Metformin is the first-line drug of choice for the treatment of type 2 diabetes, particularly in overweight and obese people and those with normal kidney function.



[ Q: 1794 ] MRCPass - 2010 January

A 50 year old man with Type 2 diabetes is currently on metformin 500mg tds. He is a muslim and prior to Ramadan, he seeks advice about managing his glycaemic control. He is concerned that he already has early diabetic retinopathy.

*What should be done?*

- 1- Advise the patient not to fast
- 2- Change metformin dose to 500mg am and 1g in the evening
- 3- Change metformin to gliclazide 160 mg am and 80 mg in the evening
- 4- Change to insulin 12 units tds
- 5- Change to glargine insulin 22 units at night

#### Answer & Comments

Answer: 2- Change metformin dose to 500mg am and 1g in the evening

Most diabetics can safely fast but more medical attention to adjust their medication

by increased dosage in the evening to combat hyperglycaemia and reduced dosage in early morning to prevent hypoglycaemia.

Hence the best answer is for the patient to increase the metformin dose in the evening to 1 g and carry on with a morning dose of 500 mg in the morning.



[ Q: 1795 ] MRCPass - 2010 January

A 62 year old woman has recently had lethargy and arthralgia. She was diagnosed as having influenza infection, as there was an outbreak in the area recently. She presents 1 week later with a cough and breathlessness. On examination, she had bilateral crackles audible on examination. CXR confirms bilateral consolidation.

*Which one of the following is most likely as a cause?*

- 1- Legionella
- 2- Mycoplasma
- 3- Streptococcus pneumoniae
- 4- Klebsiella
- 5- staphylococcus aureus

#### Answer & Comments

Answer: 5- staphylococcus aureus

Normal incidence of staph aureus pneumonia is 2%, However this is significantly increased in iv drug users and influenzae virus infections.

Post influenzae staph aureus pneumonia is characterised by rapid clinical deterioration with septicaemia.



[ Q: 1796 ] MRCPass - 2010 January

A 75-year-old man on the surgical wards develops chest pain. He is three days post-op following a colectomy for colorectal cancer (Duke's C). He is currently on a prophylactic low molecular weight heparin. An ECG performed by the nurses shows ST

elevation in the anterior leads. Aspirin and oxygen have been given.

*What is the most appropriate treatment now?*

- 1- Increase low-molecular weight heparin
- 2- Start unfractionated heparin
- 3- Arrange for primary angioplasty
- 4- arrange echocardiogram urgently to exclude pericardial tamponade
- 5- Thrombolysis with tenecteplase

#### Answer & Comments

Answer: 3- Arrange for primary angioplasty

There is no contraindication to acute coronary intervention in this case, as the prognosis of a patient with colorectal cancer post surgery is good.

Hence, primary PCI is the preferred option.



[ Q: 1797 ] MRCPass - 2010 January

A 60-year-old woman is investigated for weight loss, fatigue and anaemia. She has no past medical history of note. Clinical examination reveals splenomegaly associated with pallor. A full blood count is reported as follows:

Hb 9.8 g/dl

Platelets  $380 \times 10^9/l$

WCC  $120 \times 10^9/l$

Blood film. Demonstrates left shift with predominating myelocytes. Low percentage of blast cells.

*What is the most appropriate treatment?*

- 1- Chlorambucil
- 2- Imatinib
- 3- Thalidomide
- 4- Rituximab
- 5- Hydroxycarbamide

#### Answer & Comments

Answer: 2- Imatinib

The diagnosis here is chronic myeloid leukaemia, which accounts for 20% of all leukaemias.

It occurs mainly in middle aged and elderly people and is characterised by marked leucocytosis, a left shifted myeloid series and in 95% of patients, the Philadelphia chromosome.

Imatinib is recommended as first-line treatment for people with Philadelphia-chromosome-positive chronic myeloid leukaemia (CML) in the chronic phase. With disease progression and palliative situations, Imatinib is used in combination with recombinant alpha interferon, hydroxyurea and busulphan.



[ Q: 1798 ] MRCPass - 2010 January

A 50-year-old woman presents with a variety of physical symptoms that have been present for the past 8 years, following her mother's death. She has been complaining of tremors, sensory disturbances and fits occurring several times a day. Numerous investigations and review by a variety of specialties have indicated no organic basis for her symptoms.

*What is the diagnosis?*

- 1- Munchausen's syndrome
- 2- Hypochondriacal disorder
- 3- Dissociative disorder
- 4- Somatisation disorder
- 5- Conversion disorder

#### Answer & Comments

Answer: 5- Conversion disorder

The history fits a diagnosis of conversion disorder as below.

Munchausen syndrome (factitious disorder): the patient seeks medical attention by the deliberate production or feigning of symptoms.

The motivation for seeking attention is not known.

Hypochondriasis: (somatoform disorder) the patient is convinced that they have a life-threatening illness, despite evidence to the contrary. The core feature of hypochondriasis is not preoccupation with symptoms themselves, but rather the fear or idea of having a serious disease. The fear or idea is based on the misinterpretation of bodily signs and sensations as evidence of disease.

Somatisation disorder:(somatoform disorder) With this a patient presents with multiple, medically unexplained symptoms. The patient's life or work are frequently affected, although they also might be unconcerned about the nature of their symptoms (thus appearing calm). It is not a deliberate feigning of symptoms.

Conversion disorder : (somatoform disorder) This is a condition where a patient displays neurological symptoms e.g. paralysis, even though no neurological explanation is found and it is determined that the symptoms are due to the patient's psychological response to stress.



[ Q: 1799 ] MRCPass - 2010 January

A woman who is 33 weeks pregnant is admitted to the obstetric ward. She has been monitored for the past few weeks due to pregnancy-induced hypertension but has now developed proteinuria. Her blood pressure is 160/95 mmHg.

*Which one of the following antihypertensives is most appropriate?*

- 1- Atenolol
- 2- Methyldopa
- 3- Moxonidine

- 4- Losartan
- 5- Nifedipine

#### Answer & Comments

Answer: 2- Methyldopa

Beta blockers are safe in third trimester of pregnancy, but are generally not used due fears of IUGR.

Generally, one would favour labetalol in these circumstances given there an evidence base its use. Nifedipine may be used by experienced clinicians, but currently unlicensed. There is good evidence that methyldopa effective and safe in pregnancy.



[ Q: 1800 ] MRCPass - 2010 January

A right- handed woman presented with difficulty reading. She was investigated with a CT brain which showed right sided parietal lobe infarction.

*Which of the following is likely to be contributing to her reading difficulty?*

- 1- Agraphia
- 2- Acalculia
- 3- Left right disorientation
- 4- Visual inattention
- 5- Hemianopia

#### Answer & Comments

Answer: 4- Visual inattention

This patient is right handed, hence the left brain is dominant, and the right parietal lobe infarct is in the non dominant hemisphere.

Tests for dominant inferior parietal lobe function includes right-left orientation, naming fingers, and calculations and Gerstmann syndrome describes dominant lobe signs. A mnemonic for the signs is ALF (acalculia / agraphia, left right disorientation and finger agnosia).



The non-dominant parietal lobe is important for visual spatial sensory tasks such as attending to the contralateral side of the body and space as well as constructional tasks such as drawing a face, clock or geometric figures. A non dominant lesion leads to visual inattention and dyspraxia (unable to coordinate motor tasks).



[ Q: 1801 ] MRCPass - 2010 January

A 65 year old lady has hypertension and is currently on with several medications. Over the last few months, she has been complaining of worsening ankle oedema and fatigue.

*Which drug is likely to have caused this?*

- 1- Monoxidine
- 2- Ramipril
- 3- Amlodipine
- 4- Doxazosin
- 5- Indapamide

#### Answer & Comments

Answer: 3- Amlodipine

Ankle oedema is commonly caused by calcium channel blockers.



[ Q: 1802 ] MRCPass - 2010 January

A 47 year old patient had chest pain. His ECG showed ST elevation in the leads II, III, aVF and he also had no correlation between p waves and QRS complexes.

*Which artery is likely to be affected?*

- 1- Left main stem
- 2- Left anterior descending
- 3- Circumflex
- 4- Right coronary artery
- 5- Diagonal

#### Answer & Comments

Answer: 4- Right coronary artery

The diagnosis is an inferior myocardial infarction with complete heart block, this is most commonly due to a RCA lesion.



[ Q: 1803 ] MRCPass - 2010 January

A 60-year-old man has been on haemodialysis for chronic kidney disease for the past 5 years.

He is currently on dialysis 3 times a week. For a patient on haemodialysis, *what is the most likely eventual cause of death?*

- 1- Hyperkalaemia
- 2- Dilated cardiomyopathy
- 3- Dialysis related sepsis
- 4- Ischaemic heart disease
- 5- Renal carcinoma

#### Answer & Comments

Answer: 4- Ischaemic heart disease

Cardiovascular disease, infection and hyperkalaemia are common causes of death, with ischaemic heart disease being the most likely.

The 10 year survival rate is 50%.



[ Q: 1804 ] MRCPass - 2010 January

A 30 year old lady has a history of ventricular septal defect. She wishes to become pregnant and is undergoing cardiac assessment.

*Which one of the following complications is associated with the highest risk?*

- 1- Polycythaemia
- 2- High pressure gradient across VSD
- 3- Pulmonary hypertension
- 4- Aortic regurgitation
- 5- Overriding aorta

## Answer &amp; Comments

**Answer:** 3- Pulmonary hypertension

Pulmonary hypertension with a VSD can lead to shunt reversal (Eisenmenger's syndrome).

This will lead to significant hypoxia and can confer significant risk to oxygenation of the fetus during pregnancy.



[ Q: 1805 ] MRCPass - 2010 January

A 32-year-old female presents complaining of a purpuric rash on the back of her legs but is otherwise asymptomatic. She has no significant past medical history and has not been on any medications recently. A urine dipstick is normal. Her blood results are:

Hb 11.3 g/dl

Platelets  $30 \times 10^9/l$

WCC  $5.3 \times 10^9/l$

PT 13 secs

APTT 30 secs

sodium 135 mmol/l

potassium 4.5 mmol/l

urea 5 mmol/l

creatinine  $100 \mu\text{mol/l}$

**What is the most likely diagnosis?**

- 1- Drug-induced thrombocytopenia
- 2- Henoch-Schönlein purpura
- 3- Idiopathic thrombocytopenic purpura
- 4- Thrombotic thrombocytopenic purpura
- 5- Systemic lupus erythematosus

## Answer &amp; Comments

**Answer:** 3- Idiopathic thrombocytopenic purpura

The two most likely answers are either HSP or ITP due to the purpuric rash.

HSP is associated with other vasculitic phenomena such as renal involvement and

abdominal vasculitis. It is also not associated with a low platelet count as in this case, hence ITP is the most likely diagnosis.



[ Q: 1806 ] MRCPass - 2010 January

A 25 year old man presented with a purpuric rash. He has a history of asthma but otherwise was previously well. On examination, he had small areas of non blanching purpura around the arms and legs. Cardiac, respiratory, abdominal and neurological examinations were normal. The following results were obtained:

Hb12 g/dl

WCC  $8 \times 10^9/l$

Platelets  $18 \times 10^9/l$

**What treatment should be given?**

- 1- Blood transfusion
- 2- Splenectomy
- 3- Prednisolone
- 4- Platelet transfusion
- 5- Intravenous immunoglobulin

## Answer &amp; Comments

**Answer:** 3- Prednisolone

This patient has idiopathic thrombocytopenic purpura.

The underlying pathology is antibodies against platelets.

Bleeding from the gums, epistaxis and purpuric lesions on the skin are typical manifestations. The platelet count is low. The patient should be treated with prednisolone (usually a high dose e.g. 60 mg) with gradual tapering down once the platelet count rises. If prednisolone does not bring a response, then intravenous immunoglobulin can be administered. Patients with recurrent episodes of low platelet counts despite steroids can be considered for splenectomy.



[ Q: 1807 ] MRCPass - 2010 January

A 42-year-old man has recently started treatment for tuberculosis. He is complaining of a deterioration in his vision. On examination, his visual acuity in the right eye is 6/18 on the right and 6/12 on the left eye.

*Which one of the following drugs is most likely to be implicated?*

- 1- Rifampicin
- 2- Isoniazid
- 3- Pyrazinamide
- 4- Ethambutol
- 5- Streptomycin

#### Answer & Comments

Answer: 4- Ethambutol

The standard treatment for tuberculosis is a 6-month, four-drug initial regimen (6 months of isoniazid and rifampicin supplemented in the first 2 months with pyrazinamide and ethambutol).

Ethambutol is associated with optic neuritis (visual deterioration) and colour blindness.



[ Q: 1808 ] MRCPass - 2010 January

A 16 year old student is behaving strangely and referred to the hospital. His teacher reports that he was accused the teacher of conspiring against him. He was also hearing voices asking him to cut his own throat. He has not been himself recently, with low moods according to his family. On examination, he looks apathetic and physical examination is normal. Blood tests were unremarkable, and urine testing showed traces of cannabinoids.

*What is the likely diagnosis?*

- 1- Psychotic depression
- 2- Paranoid schizophrenia
- 3- Drug induced psychosis

- 4- Anxiety disorder
- 5- Obsessive compulsive disorder

#### Answer & Comments

Answer: 3- Drug induced psychosis

It is well established that psychotic symptoms may follow cannabis intake.

Patients who present with these symptoms may get better and be diagnosed with schizophrenia at a later stage. Patients can present with a range of symptoms including agitation, depression, visual and auditory hallucinations.



[ Q: 1809 ] MRCPass - 2010 January

A 22-year-old man presents with a painful joints. He returned 1 week ago from a holiday in Spain. Initially he had joint swellings in both wrists and now he has a left knee swelling. There is no history of trauma and he has had no knee problems previously. On examination he has a swollen, warm left knee with a full range of movement.

His ankle joints are also painful to move but there is no swelling. There was also a rash on the soles of the feet with very small vesicles. A joint aspirate was done and it showed no organisms but had increased white cells.

*What is the most likely diagnosis?*

- 1- Rheumatoid arthritis
- 2- Psoriatic arthritis
- 3- Gout
- 4- Reactive arthritis
- 5- Gonococcal arthritis

#### Answer & Comments

Answer: 5- Gonococcal arthritis

This patient with no past medical history is likely to have a reactive arthritis or septic arthritis due to gonococcal infection.

The history above is more consistent with gonococcal arthritis with the bacteremic form (classic triad of migratory polyarthritis, tenosynovitis, and dermatitis).

The patient has migratory polyarthritis with knee swelling. The arthralgias are typically asymmetric and tend to involve the upper extremities more than the lower extremities. The wrist, elbows, ankles, and knees are most commonly affected.

The ankle pains with no swelling suggests tenosynovitis. The tenosynovitis of DGI is asymmetric and most commonly occurs over the dorsum of the wrist and hand, as well as over the metacarpophalangeal joints, ankles, and knees. The rash associated with the bacteremic form of DGI may be overlooked by patients because it is painless and nonpruritic and consists of small papular, pustular, or vesicular lesions.



[ Q: 1810 ] MRCPass - 2010 January

A 16 year old female is evaluated in the pediatric endocrinology clinic for primary amenorrhoea.

*Which one of these features is consistent with testicular feminisation or androgen insensitivity syndrome?*

- 1- Male phenotype with lack of hair
- 2- Male phenotype with inguinal testis
- 3- Male phenotype with breast development
- 4- Female phenotype with clitoromegaly and undescended testis
- 5- Female phenotype with external male genitals

#### Answer & Comments

Answer: 4- Female phenotype with clitoromegaly and undescended testis

Androgen insensitivity syndrome (AIS), formerly known as testicular feminization, is an X-linked recessive condition.

A person with complete androgen insensitivity syndrome (CAIS) has a female external appearance despite a 46XY karyotype and undescended testes. This is due to the lack of sensitivity to androgen (testosterone) leading to a failure of male physical development.

Many of these patients have a female phenotype. Some patients are first seen in the teenage years for evaluation of primary amenorrhea, but most are identified in the newborn period by the presence of inguinal masses, which later are identified as testes during surgery. The patients also have a male level of testosterone and may have clitoromegaly or a micropenis.



[ Q: 1811 ] MRCPass - 2010 January

A statistician is advising a research about a study of blood pressures in a specific ethnic population. The researcher is concerned about the spread of blood pressures being larger than in the general population, hence affecting the sample mean.

*Which of these measures provides an estimate of this concept?*

- 1- Sensitivity
- 2- Specificity
- 3- Positive predictive value
- 4- Negative predictive value
- 5- Standard error of mean

#### Answer & Comments

Answer: 5- Standard error of mean

Standard deviation provides a measure of spread of observations about mean.

It based on deviation of each observation from the mean value. Standard error of the mean is the standard deviation of the sampling distribution of the mean - which gives an estimate of how close the sample mean is to the true population mean. It increases with

sample size and increases with standard deviation.

The S.E.M. is the standard deviation divided by the square root of the sample size  $SEM = \frac{s}{\sqrt{N}}$  where  $s$  is the standard deviation of the original distribution and  $N$  is the sample size.



[ Q: 1812 ] MRCPass - 2010 January

A 40 year old Caucasian female presented with malaise, dysphagia and sclerodactyly and Raynaud's phenomenon for the last 3 months. On physical examination she was afebrile and had a supine blood pressure of 110/80mm Hg. Sclerodactyly and telangiectasia were observed in both hands. Blood tests revealed:

Hb 11.5 g/dl, MCV 85 fl

erythrocyte sedimentation rate of 80 mm/first hour,

antinuclear antibody (ANA) - strongly positive  
antitopoisomerase I antibody (formerly anti SCL-70 antibody) positive

normal C3 and C4

anti-DNA, anti-centromere, anti-RNP, anti-Ro and La antibodies - negative

Chest x-ray showed bilateral basilar interstitial infiltrates.

*What is the diagnosis?*

- 1- Hereditary haemorrhagic telangiectasia
- 2- Sarcoidosis
- 3- Wegener's granulomatosis
- 4- Oesophageal carcinoma
- 5- Scleroderma

#### Answer & Comments

Answer: 5- Scleroderma

The clues here for scleroderma are dysphagia, sclerodactyly and Raynaud's phenomenon.

70% of patients initially present with Raynaud's phenomenon; 95% eventually

develop it during the course of their disease. Oesophageal dysmotility may cause reflux, aspiration or dysphagia. Pulmonary fibrosis and renal impairment are also associated.

Antinuclear antibodies are present in about 95% of the patients. Topoisomerase I antibodies (formerly Scl-70) are present in approximately 30% of patients with diffuse disease (absent in limited disease) and are associated with pulmonary fibrosis. Anticentromere antibodies are present in about 60-90% of patients with limited disease and are rare in patients with diffuse disease (which is more likely in this case).



[ Q: 1813 ] MRCPass - 2010 January

*In which one of the following areas does polypeptide degradation take place?*

- 1- Golgi body
- 2- Peroxisome
- 3- Proteosome
- 4- Endoplasmic reticulum
- 5- Ribosome

#### Answer & Comments

Answer: 3- Proteosome

The proteosome is a large complex of various proteases, proteins / polypeptides that break down other proteins in specific ways.

The proteins are usually tagged by ubiquitin before they can be degraded by proteases.

Peroxisomes participate in the breakdown of fatty acids.



[ Q: 1814 ] MRCPass - 2010 January

An 18-year-old man presents with lethargy, pyrexia and headaches. These symptoms have been present for the past 8 days. He had not been unwell before and there is no recent history of travel. Clinical examination reveals a temperature of 37.9°C,

marked cervical lymphadenopathy and mild hepatomegaly. Throat examination reveals two small erythematous areas. A full blood count result shows:

Hb 13.1 g/dl

Platelets  $225 \times 10^9/l$

WCC  $17.1 \times 10^9/l$

Neut  $5.2 \times 10^9/l$

Lymph  $11.2 \times 10^9/l$

Blood Film Atypical lymphocytes seen

*What is the most likely diagnosis?*

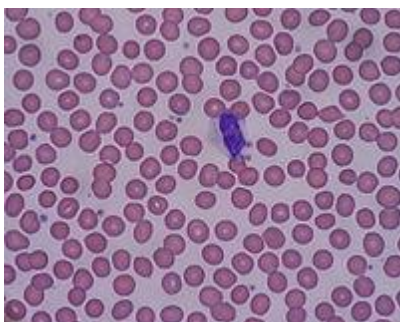
- 1- Acute lymphoblastic leukaemia
- 2- Hashimoto's thyroiditis
- 3- Infectious mononucleosis
- 4- HIV seroconversion
- 5- Septicaemia secondary to streptococcal throat infection

#### Answer & Comments

Answer: 3- Infectious mononucleosis

The history of previously being well, acute deterioration with lymphadenopathy, throat involvement and atypical lymphocytes on blood film are all consistent with Epstein Barr virus infection (glandular fever or infectious mononucleosis).

Atypical lymphocytes are commonly associated with EBV, CMV and toxoplasma infection.



Reactive lymphocytes are lymphocytes that become large as a result of antigen stimulation.



[ Q: 1815 ] MRCPass - 2010 January

A 40-year-old man with a history of bipolar disorder is admitted with acute confusion. On examination, he has tremors and was observed to have diarrhoea. He is suspected of having lithium toxicity.

*Which one of the following drugs is most likely to have precipitated this?*

- 1- Paracetamol
- 2- Steroids
- 3- Ramipril
- 4- Penicillins
- 5- Antimalarials

#### Answer & Comments

Answer: 3- Ramipril

Lithium toxicity can be precipitated particularly by thiazide diuretics and ACE inhibitors.

Other drugs which can interact are anticonvulsants, antidepressants (SSRI), phenothiazines, NSAIDs and calcium channel blockers drugs.



[ Q: 1816 ] MRCPass - 2010 January

A 62 year woman with diabetes mellitus presented with sudden onset of wild flinging movements of left arm which disturbed her during sleep at night.

*Where is the likely site of the lesion?*

- 1- Substantia nigra
- 2- Contralateral subthalamic nucleus
- 3- Non dominant parietal
- 4- Caudate nucleus
- 5- Cerebellar

#### Answer & Comments

Answer: 2- Contralateral subthalamic nucleus



The hemiballismus (swinging arm movements) is likely be due a vascular event in the subthalamic nucleus.



[ Q: 1817 ] MRCPass - 2010 January

A 60-year-old man is admitted to the resuscitation room with a GCS score of 13/ 15.

He has a past medical history of hypertension, glaucoma and diabetes. He had been found unconscious at home.. Blood gases and blood test results taken on admission show the following:

pH 7.22

pCO<sub>2</sub>- 3.5 kPa

pO<sub>2</sub> - 13.8 kPa

Na<sup>+</sup> 140 mmol/l

K<sup>+</sup> 4.2 mmol/l

Chloride 110 (95-107) mmol/l

Bicarbonate 10 (20-28) mmol/l

Urea 2.1 mmol/l

Creatinine 79 µmol/l

Glucose 7.1 mmol/l

A day following observation in the assessment unit, he complained of visual problems.

*Which one of the following diagnoses would be most consistent with these results?*

- 1- Addisonian crisis
- 2- Pulmonary embolism
- 3- Paraquat poisoning
- 4- Methanol poisoning
- 5- Diabetic ketoacidosis

#### Answer & Comments

Answer: 4- Methanol poisoning

This patient has a raised anion gap and metabolic acidosis.

The anion gap is = (Na + K) - (Cl+HCO<sub>3</sub>),  
[normal range

10-18 mmol/L]. In this case (140 + 4.2) - (110 + 10) = 24.2

Methanol poisoning can cause high anion gap metabolic acidosis and also leads to formation of formic acid from methanol, which causes retinal toxicity and visual impairment.

A useful mnemonic to remember causes of high anion gap metabolic acidosis is MUDPILES (methanol, uremia, DKA, propylene glycol, isoniazid, lactic acidosis, ethylene glycol, salicylates). The scenario is not consistent with diabetic ketoacidosis as the glucose is normal.



[ Q: 1818 ] MRCPass - 2010 January

A 58 patient has been admitted with confusion and tremors. There was no clear history available, hence the patient was kept in hospital for observation.

*Which one of the following features supports the diagnosis of alcohol withdrawal?*

- 1- History of long term memory loss
- 2- History of epilepsy
- 3- Use of cannabis
- 4- Seeing a dog lying next to the bed
- 5- Obsessive hand washing

#### Answer & Comments

Answer: 4- Seeing a dog lying next to the bed

Alcohol withdrawal delirium (delirium tremens) - this is the clinical syndrome of disorientation, perceptual disturbance and psychomotor agitation.

Visual hallucinations are commonly associated, as suggested in this case where the patient sees a dog in the hospital.

Korsakoff's associated short term memory loss, subsequent compensatory confabulation by patient. Other symptoms may include delirium, anxiety, fear, depression, confusion, delusions and insomnia.



[ Q: 1819 ] MRCPass - 2010 January

A 40-year-old woman who is known to be HIV positive is admitted to the Emergency Department following a seizure. Her partner reports that she has been having headaches, night sweats and anorexia for the past four weeks. Blood tests and a CT head are arranged:

CD4 80 cells/mm

CT head - Single ring enhancing lesion in the right parietal lobe with surrounding oedema

*What is the most likely diagnosis?*

- 1- CNS lymphoma
- 2- Tuberculosis
- 3- Progressive multifocal leukoencephalopathy
- 4- Brain abscess
- 5- Cerebral toxoplasmosis

#### Answer & Comments

Answer: 1- CNS lymphoma

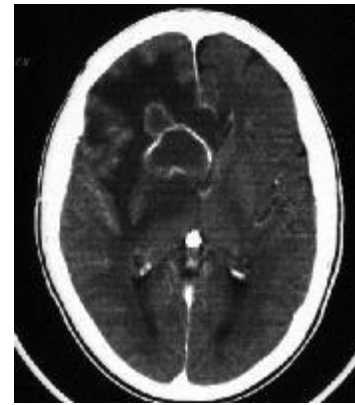
The best options are either lymphoma or toxoplasmosis, but key to differentiating is whether it is single or multiple.

With cerebral lymphoma, a single lesion that enhances in a nodular, homogeneous, or ring like pattern is observed, typically with surrounding cerebral oedema.

Toxoplasmosis is the most common cause of brain lesions in HIV patients.

The majority of lesions (90%) are However, multiple on presentation, so is less likely in the above scenario.

Tuberculous infection is much more varied radiologically, with meningeal destruction and Granulomas.



Cerebral Lymphoma



[ Q: 1820 ] MRCPass - 2010 January

A 40 year old woman is admitted to the Emergency Department with pleuritic chest pain and haemoptysis, ten days following surgery. She has oxygen saturations of 92% and is tachypnoeic. Pulmonary embolism was suspected and she was organised for a chest X ray.

*Which one of the following signs on the CXR suggests acute pulmonary embolism?*

- 1- Right heart enlargement
- 2- Prominent pulmonary vessels
- 3- Normal
- 4- Pleural effusion
- 5- Peripheral wedge shaped opacity

#### Answer & Comments

Answer: 5- Peripheral wedge shaped opacity

This question did not ask what was the most common CXR finding in pulmonary embolism which would make the best answer 'normal'.

There are two rare, signs which are Hampton's hump and Westermark sign.

Hampton's hump is a radiologic sign seen on chest radiographs indicating segmental pulmonary infarction classically due to pulmonary embolism. It consists of a pleura based shallow wedge-shaped consolidation in

the lung periphery with the base against the pleural surface.

The Westermark Sign, is a sign that represents a focus of oligemia (vasoconstriction) seen distal to a pulmonary embolus.

Right heart enlargement and prominent pulmonary vessels are signs of chronic pulmonary embolism rather than acute.



Hampton's hump in the right basal periphery on this CXR



[ Q: 1821 ] MRCPass - 2010 January

A 25 year old woman presents with lethargy, polyuria and nausea. She has no past medical history and is currently not taking medications. Her blood results are: sodium 135 mmol/l, potassium 4.3 mmol/l, urea 7 mmol/l, creatinine 90  $\mu$ mol/l, calcium 3.2 (2.25-2.7) mmol/l, phosphate 0.3 (0.8-8) pmol/l, Parathyroid hormone 18 (0.8-8) pmol/l.

*What is the likely cause of hypercalcaemia?*

- 1- Hypocalciuric hypophosphataemic rickets
- 2- Chronic kidney disease
- 3- Hypophosphataemia
- 4- Parathyroid hormone excess
- 5- 1,25 (OH) vitamin D supplementation

**Answer & Comments**

Answer: 4- Parathyroid hormone excess

The case scenario is consistent with primary hyperparathyroidism.

PTH enhances active reabsorption of calcium and magnesium from distal tubules and of the kidney.

As bone is degraded both calcium and phosphate are released. It also greatly increases the excretion of phosphate, with a net loss in plasma phosphate concentration. By increasing the calcium:phosphate ratio more calcium is therefore free in the circulation.

PTH enhances the absorption of calcium in the intestine by increasing the production of activated vitamin D. PTH up-regulates the enzyme responsible for 1-alpha hydroxylation of 25-hydroxy vitamin D, converting vitamin D to its active form (1,25-dihydroxy vitamin D).

PTH stimulates bone resorption by osteoclasts.



[ Q: 1822 ] MRCPass - 2010 January

A blood test has been used to assess the likelihood of gastric cancer. The results are as follows:

Cancer Diagnosed No Cancer

Positive 60 60

Negative 80 40

*What is the positive predictive value?*

- 1- 25%
- 2- 33.3%
- 3- 50%
- 4- 60%
- 5- 66.6%

**Answer & Comments**

Answer: 3- 50%

The positive predictive value of a test is the probability that the patient has the disease

when restricted to those patients who test positive.

This term is sometimes abbreviated as PPV. You can compute the positive predictive value as

$$PPV = TP / (TP + FP)$$

where TP and FP are the number of true positive and false positive results, respectively. In this case, the TP is 60, FP is 60 and PPV is  $60/120 = 50\%$ .



[ Q: 1823 ] MRCPass - 2010 January

A 35-year-old man is admitted with left-sided pleuritic chest pains. These pains have been occurring for the past 2 weeks. Prior to the onset of the pains, he had been experiencing flu-like symptoms.

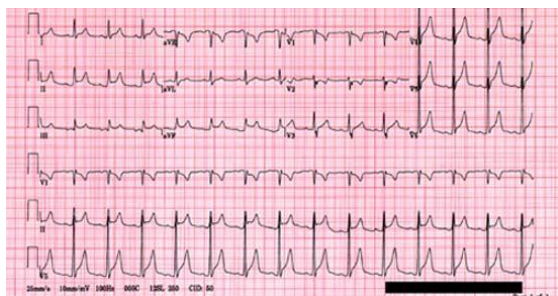
*What is the ECG most likely to show?*

- 1- S1, Q3, T3
- 2- Atrial fibrillation
- 3- Widespread ST elevation
- 4- ST segment depression in the anterior leads
- 5- Tented T waves

#### Answer & Comments

Answer: 3- Widespread ST elevation

The diagnosis is likely to be pericarditis (possibly viral aetiology) and classical ECG changes of saddle shaped ST elevation are expected



Widespread ST elevation on the ECG in pericarditis



[ Q: 1824 ] MRCPass - 2010 January

*Where is the site of action of thiazide diuretics?*

- 1- Proximal part of Distal Convuluted Tubule
- 2- Distal part of Distal Convuluted Tubule
- 3- Proximal convoluted tubule
- 4- Loop of Henle
- 5- Collecting ducts

#### Answer & Comments

Answer: 1- Proximal part of Distal Convuluted Tubule

Thiazide diuretics reduce the reabsorption of sodium and chloride in the early part of the distal convoluted tubule of the kidney.

This results in the delivery of increased amounts of sodium to the distal tubule, where some of it is exchanged for potassium. The net result is increased excretion of sodium, potassium and water.



[ Q: 1825 ] MRCPass - 2010 January

A 23 year old male medical student was brought to hospital by his girlfriend who was concerned about his behaviour. He has just returned from a student elective in the United States. Whilst he was being assessed he

appeared anxious and agitated. He was restless and paced up and down the corridor. He spoke very quickly.

Upon questioning, he said that he was doing extremely well in medicine and soon was to become the dean of the medical school.

*What is the most likely diagnosis?*

- 1- Paranoid chizophrenia
- 2- Anxiety disorder
- 3- Hypomania
- 4- Delusional disorder
- 5- Obsessive compulsive disorder

## Answer &amp; Comments

**Answer:** 3- Hypomania

Hypomania is a mood state characterized by persistent and pervasive elated or irritable mood, and thoughts and behaviour that are consistent with such a mood state.

It is distinguished from mania by the absence of psychotic symptoms and by its lower degree of impact on functioning. Patients often have pressured speech and grandiosity.

There may be flight of ideas, lack of sleep and inability to slow the mind down.



[ Q: 1826 ] MRCPass - 2010 January

A 22-year-old man presents with rectal bleeding and pain with opening his bowels. He is prone to having periods

of constipation and notices that when he cleans himself there is presence of blood on the paper. Rectal

examination reveals no abnormality.

**What is the most likely diagnosis?**

- 1- Anal fissures
- 2- Anogenital herpes
- 3- Haemorrhoid
- 4- Rectal carcinoma
- 5- Rectal polyp

## Answer &amp; Comments

**Answer:** 1- Anal fissures

An anal fissure is a crack in the wall of the anal mucosa so that the circular muscle layer is exposed.

The peak incidence is in the 20-30 year old age group. There is often a history of pain of defaecation - often first occurs during a period of constipation. There is also fresh rectal bleeding at defaecation; the patient complains of 'bright red blood on the paper'.



[ Q: 1827 ] MRCPass - 2010 January

A 43-year-old South Asian man had a routine blood test with his GP. He has no symptoms. These results were found:

Hb 10.5 g/dl, MCV 75 fl, WCC  $7 \times 10^9/l$ , platelets  $220 \times 10^9/l$ , HbA2 level 5% (<3.5%)

A blood film showed hypochromia, slight microcytosis and anisocytosis, a few target cells, and basophilic stippling.

**What is the diagnosis?**

- 1- Sideroblastic anaemia
- 2- Alpha thalassemia trait
- 3- Beta thalassemia trait
- 4- Acute intermittent porphyria
- 5- Lead poisoning

## Answer &amp; Comments

**Answer:** 3- Beta thalassemia trait

The difficulty here is that both lead poisoning and thalassemia trait, the blood film shows an iron deficiency picture, target cells and basophilic stippling.

As this patient is asymptomatic, it fits thalassemia better. Below are descriptions of some of the options.

thalassemia trait (minor): This trait is characterized by mild anemia and low RBC indices. This condition is typically caused by the deletion of 2 ? (a) genes on one chromosome 16 (aa/oo) or one from each chromosome (ao/ao).

This condition is encountered mainly in Southeast Asia, the Indian subcontinent.

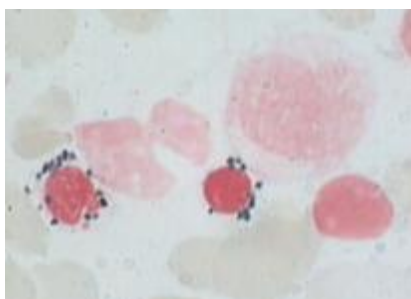
thalassemia trait (minor): Patients have mild anemia, abnormal RBC indices, and abnormal Hb electrophoresis results with elevated levels of Hb A2, Hb F, or both. Peripheral blood film examination usually reveals marked hypochromia and microcytosis (without the anisocytosis usually encountered in iron



deficiency anemia), target cells, and faint basophilic stippling. The production of  $\alpha$  chains from the abnormal allele varies from complete absence to variable degrees of deficiency.

Sideroblastic anemias: they usually associated with microcytosis and hypochromia and thus must be distinguished from the anaemia of iron deficiency and thalassemia. A defect causes iron to accumulate in mitochondria ringing the red cell nucleus forming "ringed sideroblasts". Most sideroblastic anaemia are acquired and are associated with drugs (alcohol\*, isoniazid, chloramphenicol, cytotoxic agents, and other Vit B6 antagonists), heavy metals (lead), and various hematologic, neoplastic and inflammatory diseases.

Lead poisoning: the anaemia is usually microcytic; with basophilic stippling; ringed sideroblasts; increased serum Fe, but may be haemolytic. Symptoms include abdominal pain with constipation; metabolic acidosis, and may lead to shock, coma and death.



Ring sideroblast - iron accumulation in mitochondria in red cells



Basophilic stippling - due to denatured RNA in the red blood cells



[ Q: 1828 ] MRCPass - 2010 January

A 42-year-old man has recently been diagnosed with non-Hodgkin's lymphoma. He has a long history of alcoholism and has significant alcohol-related peripheral neuropathy.

*Which one of the following chemotherapy agents should be avoided?*

- 1- Chlorambucil
- 2- Cyclophosphamide
- 3- Epirubicin
- 4- Vincristine
- 5- Rituximab

#### Answer & Comments

Answer: 4- Vincristine

Vincristine (brand name, Oncovin), also known as leurocristine, is a vinca alkaloid.

It works through disruption of the microtubules which in turns disrupts metaphase in mitosis. Its main uses are in non-Hodgkin's lymphoma as part of the chemotherapy regimen CHOP, Hodgkin's lymphoma as part of MOPP, COPP, BEACOPP.

The main side-effects of vincristine are peripheral neuropathy (which can be severe), hyponatremia and hair loss.



[ Q: 1829 ] MRCPass - 2010 January

A 22-year-old man is investigated for weight loss and abdominal pains. He also had altered bow el habit with occational diarrhoea. A rectal biopsy is taken and reported as follows:

Deep inflammatory infiltrate from the mucosa to the lamina propria

Numerous non caseating granulomata were also seen.

*What is the most likely diagnosis?*

- 1- Crohn's disease



- 2- Whipple's disease
- 3- Tuberculosis
- 4- Laxative abuse
- 5- Ulcerative colitis

#### Answer & Comments

**Answer:** 1- Crohn's disease

Microscopically, the classical changes seen with Crohn's disease are non-caseating granulomas, transmural inflammation and lymphocyte infiltration.

The terminal ileum, caecum and rectum are areas most commonly involved.



[ Q: 1830 ] MRCPass - 2010 January

A 32-year-old man who has returned from a holiday in Egypt presents with diarrhoea. For the past two days he has been passing frequent bloody diarrhoea associated with crampy abdominal pain. Abdominal examination demonstrates diffuse lower abdominal tenderness but there is no guarding or rigidity. His temperature is 37.7°C.

*What is the most likely causative organism?*

- 1- Giardiasis
- 2- Enterotoxigenic Escherichia coli
- 3- Staphylococcus aureus
- 4- Shigella
- 5- Salmonella

#### Answer & Comments

**Answer:** 4- Shigella

All are common causes of traveller's diarrhoea.

However, North Africa and the Middle East (in particular Egypt) were also commonly reported regions of travel for Shigella spp infections.

Some of the infectious causes of bloody diarrhoea are:

- Salmonella
- Shigella
- Campylobacter jejuni
- Yersinia enterocolitica
- E. coli
- Entamoeba histolytica



[ Q: 1831 ] MRCPass - 2010 January

*Which one of the following is implicated with a JAK2 mutation?*

- 1- Multiple myeloma
- 2- Squamous cancer of the lung
- 3- Polycythaemia rubra vera
- 4- Haemophilia
- 5- Von Willebrand's disease

#### Answer & Comments

**Answer:** 3- Polycythaemia rubra vera

Janus kinase 2 (commonly called JAK2) is a human protein that has been implicated in signaling by members of the type II cytokine receptor family.

These mutations have been associated with polycythemia vera, essential thrombocythemia, and other myeloproliferative disorders.



[ Q: 1832 ] MRCPass - 2010 January

A 25 year old man has recently been to India for a holiday, returning a week ago. He presents with fatigue and abdominal pains. He gives a history of diarrhoea for 5 days. On examination, he was jaundiced and had tender hepatomegaly. His investigations show:

sodium 135 mmol/l, potassium 4.2 mmol/l, urea 5 mmol/l, creatinine 100 µmol/l, ALT 1380 (5-35) U/l, AST 1430

(1-31) U/l, ALP 360 (20-120) U/l, GGT 320 (4-35) U/l, Bilirubin 35 (1-22) µmol/l, Albumin 35 (37-49) g/l

*What is the likely diagnosis?*

- 1- HIV infection
- 2- Leptospirosis infection
- 3- Acute hepatitis A infection
- 4- Acute hepatitis B infection
- 5- Infectious mononucleosis

#### Answer & Comments

Answer: 3- Acute hepatitis A infection

The abrupt onset of fever, fatigue, malaise, anorexia, nausea, diarrhea, jaundice and abdominal discomfort are consistent with acute hepatitis A infection (especially history of diarrhoea).

Leptospirosis is less likely as there is no renal involvement and infectious mononucleosis does not usually cause diarrhoea.



[ Q: 1833 ] MRCPass - 2010 January

A 62-year-old man was diagnosed with atrial fibrillation 3 weeks ago and started on digoxin 125 mcg od and warfarinised. Despite this treatment he still feels his 'heart race' regularly. An echocardiogram recently done showed moderate left ventricular dysfunction. On examination his pulse is 110 / min, irregularly irregular and respiratory examination is unremarkable.

*What is the most appropriate next step in management?*

- 1- Switch digoxin for verapamil
- 2- Electrical cardioversion
- 3- Add amiodarone
- 4- Add bisoprolol

5- Flecainide

#### Answer & Comments

Answer: 4- Add bisoprolol

It is difficult to tell if this patient has persistent or permanent atrial fibrillation.

If he presents acutely and unwell, then cardioversion (rhythm control) should be considered. However, he has already gone down the rate control route, and NICE guidelines states that for patients not controlled with monotherapy, a combination of either beta blocker/calcium channel blocker with digoxin should be given.

<http://www.nice.org.uk/nicemedia/pdf/CG036niceguideline.pdf>



[ Q: 1834 ] MRCPass - 2010 January

A 22 year old woman presents with lethargy. She has no past medical history. She takes only an oral contraceptive pill daily. On examination, she has a slim build and a BMI of 23 and the only abnormality seen is dental erosions. Her blood results show :

sodium 132 mmol/l, potassium 2.8 mmol/l, urea 5 mmol/l, creatinine 100 µmol/l, AST 40 (1-31) U/l, ALP 150 (20-120)

U/l, Bilirubin 18 (1-22) µmol/l, Albumin 38 (37-49) g/l, calcium 2.0 (2.25-2.7) mmol/l, phosphate 0.75 (0.8-8) pmol/l,

amylase 260 (60-180) U/l.

*What is the diagnosis?*

- 1- Bulimia nervosa
- 2- Crohn's disease
- 3- Laxative abuse
- 4- Diuretic use
- 5- Pregnancy

#### Answer & Comments

Answer: 1- Bulimia nervosa

Bulimia nervosa is most likely due to the dental erosions.

Bulimia can produce a variety of metabolic and electrolytic imbalances, especially when combined with anorexia nervosa or aggravated by the abuse of laxatives, diuretics, thyroid hormone replacement medications and cathartics. Less frequent signs and symptoms include metabolic alkalosis, low levels of serum protein, zinc depletion, low levels of tryptophan and serotonin, low levels of serum calcium and chloride, high levels of alkaline phosphatase, and high levels of serum amylase.

There is an increase in the total blood volume, the plasma volume and the red cell volume during pregnancy. The total blood volume increases by about 30-40% by about 34 weeks of pregnancy causing a haemodilution. However, to produce such significant changes, it would be a later stage of pregnancy the diagnosis should then be obvious in this patient.



[ Q: 1835 ] MRCPass - 2010 January

A 18 year old man has presented for investigation with haematuria. On his urine dipstick, there were blood ++.

When enquired about family history, he said his father and older brother also had haematuria. An ANCA and ANA screen was done with negative results. An ultrasound of the kidney was normal and his creatinine was 80  $\mu\text{mol/l}$ .

*What is the likely diagnosis?*

- 1- Polyarteritis nodosa
- 2- Systemic lupus erythematosus
- 3- Alport's syndrome
- 4- Ig A nephropathy
- 5- Exercise induced haematuria

### Answer & Comments

Answer: 3- Alport's syndrome

Alport's syndrome leads to a glomerulonephritis.

It is a primary basement membrane disorder arising from mutations in genes encoding several members of the type IV collagen protein family. The disease is mainly inherited in the X linked form. In males, there is only one X chromosome, so the disease tends to manifest in males with the immediate family as suggested above.

The clinical manifestations include recurrent episodes of gross hematuria, especially in childhood, as in the case vignette. Hypertension, proteinuria and sensorineural hearing loss can take place although those clues were not given in this scenario.



[ Q: 1836 ] MRCPass - 2010 January

You are performing a study of blood pressure readings in patients with chronic kidney disease. Assuming that the results are normally distributed, *what percentage of values lies above two standard deviations of the mean reading?*

- 1- 2.5
- 2- 5
- 3- 10
- 4- 95.4
- 5- 99.7

### Answer & Comments

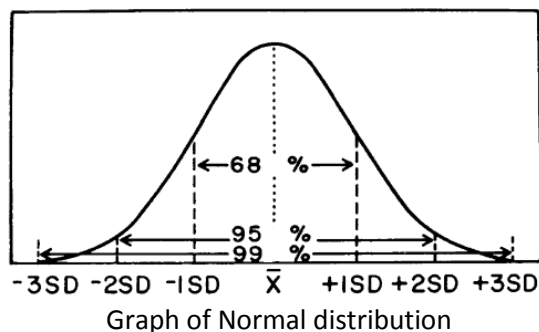
Answer: 1- 2.5

The question has to be read cautiously.

In this question regarding 2 standard deviations, 95% of patients will lie within 2 SD and 2.5% of patients will lie above 2 SD and 2.5% of patients will lie below 2 SD.

- 68.3% of values lie within 1 SD of the mean

- 95.4% of values lie within 2 SD of the mean
- 99.7% of values lie within 3 SD of the mean



[ Q: 1837 ] MRCPass - 2010 January

A 47-year-old man with habitual smoking habit (2 packs per day) presents with haemoptysis. He also suffered had poor appetite for 6 months and body weight loss (loss 6 kilograms). His blood results are:

Hb 11.5 g/dl, MCV 75 fl, WCC  $6 \times 10^9/l$ , platelets  $200 \times 10^9/l$ , sodium 125 mmol/l, potassium 4.5 mmol/l, urea 5 mmol/l, creatinine 100  $\mu\text{mol/l}$ .

*Which one of the following is the most likely lung cancer in this patient?*

- 1- Squamous cell
- 2- Small cell
- 3- Adenocarcinoma
- 4- Large cell
- 5- Carcinoid

#### Answer & Comments

Answer: 2- Small cell

Small-cell lung cancer accounts for approximately 20-25% of all cases of lung cancer.

It is strongly associated with smoking. Small cell carcinomas produce ACTH and ADH, which can lead to SIADH, the clue in the history is hyponatraemia.



[ Q: 1838 ] MRCPass - 2010 January

A 19 year-old man presents with facial and ankle swelling which has slowly been developing over the past 2 weeks. A urine dipstick shows protein ++++.

*What is the most likely cause of this presentation?*

- 1- IgA nephropathy
- 2- Focal segmental glomerulonephritis
- 3- Minimal change disease
- 4- Membranous glomerulonephritis
- 5- Renal cell carcinoma

#### Answer & Comments

Answer: 4- Membranous glomerulonephritis

With no haematuria, IgA nephropathy is unlikely.

The most likely options are minimal change and membranous. Due to the age of presentation, membranous glomerulonephritis is the best answer.

Minimal change nephropathy is responsible for 90% of the cases of nephrotic syndrome in children less than 5 years of age. The name is due to the fact that the only detectable abnormality histologically is fusion and deformity of the foot processes under the electron microscope. It also occurs in adults - approx 20%. Normal renal function and blood pressure are typical.

Membranous glomerulonephritis often presents with nephrotic syndrome in males. It is characterized histologically by thickening of the capillary basement membrane secondary to the deposition of immune complexes. It is associated with SLE, drugs and malignancy. About 33% of patients affected go into spontaneous remission over five years, but the remainder are likely to develop progressive renal failure. Focal segmental glomerulonephritis is a possibility for

nephrotic presentation but is often associated with HIV and malignancy, and less common.



[ Q: 1839 ] MRCPass - 2010 January

A 35 year old woman who is on several different medications has developed alopecia.

*Which one of the following drugs is likely to cause this?*

- 1- Methyldopa
- 2- Sodium valproate
- 3- Phenytoin
- 4- Metoclopramide
- 5- Minoxidil

#### Answer & Comments

Answer: 2- Sodium valproate

Dyspepsia, weight gain and alopecia are side effects of sodium valproate



[ Q: 1840 ] MRCPass - 2010 January

A 70-year-old man is admitted to the hospital with fevers, lethargy and night sweats.

He has a history of diabetes and had a prosthetic mitral valve replacement 5 years ago. An echocardiogram is arranged which shows a vegetation around the prosthetic mitral valve. 3 sets of blood cultures were taken and 4/6 of the bottle grew alpha haemolytic streptococci, a day later.

*What is the most appropriate antibiotic therapy?*

- 1- IV benzylpenicillin + vancomycin
- 2- IV benzylpenicillin + gentamicin
- 3- IV ceftriaxone + benzylpenicillin
- 4- IV flucloxacillin + gentamicin
- 5- IV vancomycin + gentamicin + rifampicin

#### Answer & Comments

Answer: 2- IV benzylpenicillin + gentamicin

Alpha haemolytic streptococci suggests strep viridans.

Acute endocarditis is most commonly caused by staph aureus, whilst subacute endocarditis (often with prosthetic valves) is most commonly caused by strep viridans.

Standard therapy to start with (until cultures are known) is intravenous benzylpenicillin and gentamicin unless staphylococcal is suspected or if there is penicillin allergy when vancomycin is substituted for penicillin.

For strep viridans infection treatment is for 2 weeks with benzylpenicillin and gentamicin.



[ Q: 1841 ] MRCPass - 2010 January

A 25-year-old male athlete suffered cardiac arrest while playing football. He was resuscitated on the field but passed away on the way to hospital. The patient had previously noticed an "irregular heart beat" on several occasions but no chest pain. He had no family history of cardiac arrhythmia or sudden death.

*What is the most likely cause of death?*

- 1- Arrhythmogenic right ventricular cardiomyopathy
- 2- Brugada syndrome
- 3- Massive pulmonary embolus
- 4- Hypertrophic cardiomyopathy
- 5- Diabetic ketoacidosis

#### Answer & Comments

Answer: 4- Hypertrophic cardiomyopathy

Although all are possibilities, under the age of 35, the most common cause of sudden death among athletes is hypertrophic cardiomyopathy.

In hypertrophic cardiomyopathy, there is a thickened cardiac muscle, no evidence of chamber enlargement, and extensive myocardial scarring.

Athletes with hypertrophic cardiomyopathy have an increased frequency of ventricular arrhythmia (a disturbance in the rhythm of the heartbeat). In these cases, the cardiac enlargement is concentric (symmetric) and there is no evidence of obstruction of the outflow tract in the left ventricle. Athletes with this condition often complain of cardiac palpitation or cardiac flutter and may have syncopal or fainting episodes, in which the athlete collapses after a strenuous workout.



[ Q: 1842 ] MRCPass - 2010 January

A 55-year-old man with many years of type 2 diabetes and multiple complications presents complaining of occasional episodes of green/blue vision. He is taking many medications, *which is the likely drug causing this?*

- 1- Phenytoin
- 2- Lithium
- 3- Metformin
- 4- Cisapride
- 5- Sildenafil

#### Answer & Comments

Answer: 5- Sildenafil

Sildenafil (Viagra) is a phosphodiesterase inhibitor used for erectile dysfunction.

The principal side-effects include dyspepsia, flushing and dizziness. The green/blue tint to vision is more common at the higher doses - and it might make it easy to remember as the pills are blue. The retina contains phosphodiesterase and inhibition of this is thought to be responsible for this phenomenon.



[ Q: 1843 ] MRCPass - 2010 January

A 35 year old man has presented with back pains and joint pains over several months. He has no other past medical history to date. He mentioned that his father had a history of joint problems. On examination, there is no evidence of skin involvement. Joint examination revealed evidence of synovitis in the metacarpophalangeal, metatarsal and wrist joints bilaterally limiting his range of joint movements.

Laboratory testing revealed a C-reactive protein of 0.33 mg/dl (<0.80 mg/dl), strong positive CCP antibody, IgG of 148 Units (<20 Units), and angiotensin-converting-enzyme (ACE) of 73 U/liter (<67 U/liter). Anti nuclear antibody (ANA), anti neutrophil cytoplasmic antibody (ANCA) and rheumatoid factor (Rh F) were negative.

*What is the diagnosis?*

- 1- Dermatomyositis
- 2- Psoriatic arthropathy
- 3- Rheumatoid arthritis
- 4- Osteoarthritis
- 5- Systemic lupus erythematosus

#### Answer & Comments

Answer: 3- Rheumatoid arthritis

Anti-citrullinated protein/peptide antibodies (Anti-CCP) are autoantibodies frequently detected in rheumatoid arthritis patients.

It has a sensitivity of 70% as a diagnostic test. The positive anti-CCP antibodies and symmetrical polyarthropathy without skin involvement suggests rheumatoid arthritis.

Rheumatoid factor is an IgM antibody against IgG. Some patients with rheumatoid arthritis will have a negative rheumatoid factor, as in this case.



[ Q: 1844 ] MRCPass - 2010 January



A patient has developed facial swelling following treatment with an ACE inhibitor. In patients with angioedema, *which chemical mediator is mainly responsible for causing vascular permeability and the tissue oedema?*

- 1- Histamine
- 2- Serotonin
- 3- Neurokinin A
- 4- Bradykinin
- 5- Nitric oxide

#### Answer & Comments

Answer: 4- Bradykinin

Bradykinin is a vasoactive nonapeptide produced by the kinin system.

It causes vasodilation, possibly by a direct effect and via prostaglandin mediation. It also causes an increase in vascular permeability by the opening of intercellular gaps in post-capillary venules. Bradykinin is inactivated by angiotensin converting enzyme, hence ACE inhibitors are often associated with angioedema.



[ Q: 1845 ] MRCPass - 2010 January

A 82 year old man is admitted with palpitations, dizziness and shortness of breath. He has a history of hypertension and diabetes. His current medications are bendroflumethiazide and metformin. He has an ECG which showed atrial fibrillation with a heart rate of 150 bpm. On examination, he has a BP of 80/45 mmHg and JVP is raised. His heart sounds are normal and there are a few crackles in the bases of the lungs.

*Which of the following is the best management?*

- 1- IV verapamil
- 2- IV Amiodarone
- 3- IV Bisoprolol
- 4- DC cardioversion

#### 5- Thrombolysis

#### Answer & Comments

Answer: 4- DC cardioversion

This patient is symptomatic and unstable with hypotension, DC cardioversion is the best option as it will restore sinus rhythm and allow the patient a good chance of recovery.

Amiodarone is a good option, but this scenario of unstable patient suggests DC cardioversion is quicker. As verapamil and bisoprolol are negatively inotropic, they are contraindicated due to the hypotension.



[ Q: 1846 ] MRCPass - 2010 January

*Which one of these conditions is associated with Human Herpes Virus (HHV) 8 infection?*

- 1- Chicken pox
- 2- Malignant melanoma
- 3- Genital warts
- 4- Kaposi's sarcoma
- 5- Shingles

#### Answer & Comments

Answer: 4- Kaposi's sarcoma

HHV 8 is associated with co-infection with HIV and Kaposi's sarcoma.

Genital warts are caused by Human Papilloma virus. Chicken pox is caused by varicella zoster virus. Shingles is caused by latent reactivation of the varicella zoster virus within a nerve.



[ Q: 1847 ] MRCPass - 2010 January

A 33-year-old Caucasian woman admitted has a history of widespread, pruritic, erythematous skin rash, joint pains and renal disease. She recently had a baby with congenital heart block. Laboratory investigations revealed mild leucopenia (w

hite cell count  $3.25 \times 10^9/\text{ml}$  and thrombocytopenia (platelets  $140 \times 10^9/\text{ml}$ ). Erythrocyte sedimentation rate was increased (65 mm/h).

*Which antibody is likely to be positive?*

- 1- Anti Jo 1
- 2- Anti double stranded DNA
- 3- Anti Ro
- 4- Anti centromere
- 5- ANCA

#### Answer & Comments

Answer: 3- Anti Ro

The anti Ro antibody is associated with Sjogren's syndrome, SLE and neonatal lupus.

Neonatal lupus erythematosus (NLE) is a rare disorder caused by the transplacental passage of maternal autoantibodies. Only 1% of infants with positive maternal autoantibodies develop neonatal lupus erythematosus. The most common clinical manifestations are cardiac (congenital heart block), dermatologic (urticaria and skin desquamation), and hepatic (abnormal LFTs). The mother produces immunoglobulin G (IgG) autoantibodies against Ro (SSA), La (SSB), and/or U1-ribonucleoprotein (U1-RNP), and they are passively transported across the placenta. These autoantibodies can be found alone or in combination; However, anti-Ro is present in almost 95% of patients.



[ Q: 1848 ] MRCPass - 2010 January

A 64-year-old man presents with a eight-month history of generalised weakness. He has no previous past medical history but his father had a history of a similar illness at the age of 78. On examination he has fasciculation and weakness in both arms with absent reflexes. Examination of the lower limbs reveal increased tone and brisk reflexes with upgoing plantars. There was no sensory deficit.

*What is the most likely diagnosis?*

- 1- Amyotrophic lateral sclerosis
- 2- Multiple sclerosis
- 3- Progressive muscular atrophy
- 4- Subacute combined degeneration
- 5- Syringomyelia

#### Answer & Comments

Answer: 1- Amyotrophic lateral sclerosis

Amyotrophic lateral sclerosis is a form of motor neurone disease (MND).

It is the most common form of MND and accounts for 65% to 85% of all cases of MND. It is typically late onset, rapidly progressive and presents with a combination of upper and lower motor neuron signs.

Three main types of MND are recognised and most patients eventually develop features of all three:

progressive muscular atrophy  
amyotrophic lateral sclerosis  
bulbar palsy



[ Q: 1849 ] MRCPass - 2010 January

A 65-year-old female is admitted to the Emergency Department following an overdose of a long-acting atenolol preparation. On admission she is bradycardic with a pulse of 35/min and BP 90/50 mmHg. The bradycardia fails to respond to 3 doses of 1 mg of atropine.

*What is the next most appropriate management?*

- 1- Temporary cardiac pacing
- 2- Calcitonin
- 3- Glucagon
- 4- Noradrenaline infusion
- 5- Salbutamol infusion

## Answer &amp; Comments

**Answer:** 3- Glucagon

Glucagon stimulates production of cAMP through nonadrenergic pathways and can be given early in beta blocker poisoning.

A dose of 3-10 mg IV bolus followed by 2-5 mg/h infusion should be commenced. Cardiac pacing should be reserved for patients unresponsive to pharmacologic therapy or for those with torsade de pointes unresponsive to magnesium.



[ Q: 1850 ] MRCPass - 2010 January

A 35 year old man was investigated for palpitations. He was told that he had premature ventricular complexes on the ECG. However, he was convinced that he had cancer and presented to the surgery many times over the year despite reassurance.

*What is the diagnosis?*

- 1- Munchausen's syndrome
- 2- Hypochondriasis
- 3- Dissociative disorder
- 4- Somatisation disorder
- 5- Conversion disorder

## Answer &amp; Comments

**Answer:** 2- Hypochondriasis

The history fits a diagnosis of hypochondriasis as below Munchausen syndrome (factitious disorder): the patient seeks medical attention by the deliberate production or feigning of symptoms.

The motivation for seeking attention is not known.

Hypochondriasis: (somatoform disorder) the patient is convinced that they have a life-threatening illness, despite evidence to the contrary. The core feature of hypochondriasis is not preoccupation with symptoms

themselves, but rather the fear or idea of having a serious disease. The fear or idea is based on the misinterpretation of bodily signs and sensations as evidence of disease.

Somatisation disorder: (somatoform disorder) With this a patient presents with multiple, medically unexplained symptoms. The patient's life or work are frequently affected, although they also might be unconcerned about the nature of their symptoms (thus appearing calm). It is not a deliberate feigning of symptoms.

Conversion disorder : (somatoform disorder) This is a condition where a patient displays neurological symptoms e.g. paralysis, even though no neurological explanation is found and it is determined that the symptoms are due to the patient's psychological response to stress.



[ Q: 1851 ] MRCPass - 2010 January

A 45-year-old woman presents with weight gain and recurrent 'dizzy' episodes. Over the past four months she has gained 15 kg. The episodes occur on an almost daily basis and are characterised by blurred vision, sweating and headaches. Her GP checked a blood sugar during one of these episodes which was recorded as being 2.0 mmol/l.

*What is the single most useful test if the patient presents with a further such episode?*

- 1- Glucagon level
- 2- Plasma glucose
- 3- Insulin + C-peptide levels
- 4- Sulphonylurea level
- 5- Thyroid function

## Answer &amp; Comments

**Answer:** 3- Insulin + C-peptide levels

The ideal measurement is glucose, insulin and C peptide levels.

This is not given as an option, and neither is a 72 hour fast. Only an insulin and C peptide level (which are elevated during one of these episodes) will confirm the diagnosis of a possible insulinoma (pancreatic insulin secreting tumour as suggested in the clinical history).

A 72-hour fast, usually supervised in a hospital setting, can be done to see if insulin levels fail to suppress during a hypoglycaemic episode (glucose <2.5 mmol/l). The C peptide levels as proinsulin is broken down to insulin and C peptide. If present, then the patient is unlikely to be injecting insulin exogenously.



[ Q: 1852 ] MRCPass - 2010 January

A new drug which has been on the market for 2 years, has had reports of possible serious side effects of fulminant hepatitis.

*What is the best way of evaluate this from a safety perspective?*

- 1- Metanalysis
- 2- Postmarketing surveillance
- 3- Randomised controlled trial
- 4- Systematic review
- 5- Case control study

#### Answer & Comments

Answer: 2- Postmarketing surveillance

New drugs which have had regulatory approval may not have trial data which contain enough information about rare, serious side effects, and there may not be sufficiently large trials for a new drug for metanalysis.

Postmarketing surveillance (PMS) is the practice of monitoring the safety of a pharmaceutical drug after it has been released on the market and is an important part of the science of pharmacovigilance.

Since drugs are approved on the basis of clinical trials which involve relatively small numbers of people who have been selected for this purpose, postmarketing surveillance can further refine the safety of a drug after it is used in the general population by large numbers of people who have a wide variety of medical conditions.

Postmarketing surveillance uses a number of approaches to monitor the safety of licensed drugs, including spontaneous reporting databases, prescription event monitoring, electronic health records, patient registries and record linkage between health databases.



[ Q: 1853 ] MRCPass - 2010 January

A 42-year-old male developed neck pain which had worsened over several years. He presented to a rheumatologist with weight loss, back pain and stiffness. Clinical examination showed very restricted neck movement and chest expansion with no lumbar spinal movement. X rays of the patient's spine were performed.

*What feature would be expected on the x rays in ankylosing spondylitis?*

- 1- Sclerosis
- 2- Syndesmophyte
- 3- Lytic lesions
- 4- Osteophyte
- 5- Wedge shaped lesions

#### Answer & Comments

Answer: 2- Syndesmophyte

Typical X ray changes of ankylosing spondylitis are the visible formation of syndesmophytes (bony growth originating inside a ligament) and abnormal bone outgrowths similar to osteophytes affecting the spine.

These changes lead to an appearance of 'bamboo spine'.



Syndesmophyte



[ Q: 1854 ] MRCPass - 2010 January

A 40-year-old woman is referred by her GP with a history of oligomenorrhoea. In clinic, the patient also describes acne as well as hirsutism, such that she has to shave around her chin and lip region every week. Her body mass

index is 35 Kg/m<sup>2</sup> and Blood pressure was 170 / 95 mmHg. The following blood results were obtained:

Her fasting blood glucose is 6.8mmol/l.

testosterone 7 (1.1-6.3) pg/ml

LH 16 (0.5-14.5) U/l

FSH 2.8 (1-11) U/l

*What is the most likely diagnosis?*

- 1- Congenital adrenal hyperplasia
- 2- Cushing's syndrome
- 3- Conn's syndrome
- 4- Polycystic ovarian syndrome
- 5- Uterine fibroids

#### Answer & Comments

Answer: 4- Polycystic ovarian syndrome

This lady has oligomenorrhoea with evidence of hyperandrogenism and the most likely cause is polycystic ovarian syndrome (PCOS), which is characterised by hyperandrogenism.

In the complete syndrome, adipose tissue aromatise peripheral androgens to oestrogens. This suppresses FSH thus reducing follicular maturation and fertility, as well as increases LH resulting in further androgen synthesis. Increased androgens results in hirsutism and acne and also maintain the cycle of peripheral aromatisation to maintain elevated oestrogen levels. An elevated LH:FSH ratio of greater than 3 is useful in confirming the diagnosis of PCOS but its absence does not exclude it.



[ Q: 1855 ] MRCPass - 2010 January

A 17-year-old man presented casualty complaining of difficulty breathing. He had brought hospital by ambulance, having collapsed shortly after being stung on hand by a bee. On examination, his blood pressure was 80/40 mmHg, facial swelling and pharyngeal oedema was noted.

*Which one of following investigations likely confirm anaphylaxis?*

- 1- Haemolytic complement (CH50) level
- 2- Plasma tryptase activity
- 3- Complement C3 level
- 4- Total IgE level
- 5- Eosinophil count

#### Answer & Comments

Answer: 2- Plasma tryptase activity

The reaction involves preferential production of IgE, in response certain antigens, which in turn initiates a sequence of events leading to mast cell activation.

According to the Resuscitation council guidelines, the specific test to help confirm a

diagnosis of an anaphylactic reaction is measurement of mast cell tryptase.

Tryptase is the major protein component of mast cell secretory granules. In anaphylaxis, mast cell degranulation leads to markedly increased blood tryptase concentrations. Tryptase levels are useful in the follow-up of suspected anaphylactic reactions, not in the initial recognition and treatment: measuring tryptase levels must not delay initial resuscitation. Tryptase concentrations in the blood may not increase significantly until 30 minutes or more after the onset of symptoms, and peak 1-2 hours after onset.

The half-life of tryptase is short (approximately 2 hours), and concentrations may be back to normal within 6-8 hours, so timing of any blood samples is very important.

<http://www.resus.org.uk/pages/reaction.pdf>



[ Q: 1856 ] MRCPass - 2010 January

A 35 year old man presented with a generalised seizure. On examination, he was found to have adenoma sebaceum on the face, two hypopigmented areas and subungual fibroma. He had a urine dipstick showing blood ++ and was organised to have an ultrasound of the kidneys which showed cystic changes.

*What is the likely diagnosis?*

- 1- Von Hippel Lindau
- 2- Neurofibromatosis
- 3- Vitiligo
- 4- Acromegaly
- 5- Tuberous sclerosis

#### Answer & Comments

Answer: 5- Tuberous sclerosis

The diagnosis is tuberous sclerosis.

It is an autosomal dominant condition. Features are epilepsy (cortical tubers in the

brain), adenoma sebaceum on the skin, subungual fibroma of the nails, oval hypopigmented macules - ash leaf macules - best seen with Wood's (UV) light, retina phakoma, renal angiomyolipoma (causing cystic renal lesions) and cardiac rhabdomyomas.



[ Q: 1857 ] MRCPass - 2010 January

A patient presents with an inability to abduct his right shoulder.

*Which nerve supplies this muscle?*

- 1- Lateral cutaneous
- 2- Suprascapular
- 3- Musculocutaneous
- 4- Axillary
- 5- Median

#### Answer & Comments

Answer: 4- Axillary

The deltoid muscle is implicated here, as the action is shoulder abduction.

It is innervated by the axillary nerve (C5 and C6).



[ Q: 1858 ] MRCPass - 2010 January

A set of parents is seeking genetic advice. They said that their 5-year-old boy with cystic fibrosis but they themselves do not have the disease. They also have a daughter who is 17 years old but not affected by the disease.

*What is the chance that she will be a carrier of the cystic fibrosis gene?*

- 1- 1 in 2
- 2- 1 in 4
- 3- 2 in 3
- 4- 1 in 25
- 5- 100% chance



## Answer &amp; Comments

**Answer:** 3- 2 in 3

Inheritance of cystic fibrosis is autosomal recessive.

In answering this question, the simple mistake is to take carriers out of total, which makes a 1 in 2 chance. The diagram below illustrates the best way of working this out.

As the daughter is not affected, there are 3 other options, so she might be a carrier in 2 of the 3 scenarios (2 in 3).



[ Q: 1859 ] MRCPass - 2010 January

A 45 year old lady presented to her GP with lesions in skin that were circular with an erythematous raised rim with central atrophy. There was scaliness, follicular plugging, and telangiectasia over the scalp, ears and face.

This was confirmed to be discoid lupus by the dermatologist and she has been tried on betnovate steroid topical treatment but has not improved.

**What should be used next?**

- 1- Diprobace cream
- 2- Tacrolimus
- 3- Azathioprine
- 4- Hydroxychloroquine
- 5- PUVA therapy

## Answer &amp; Comments

**Answer:** 4- Hydroxychloroquine

Discoid lupus erythematosus (DLE) is a chronic, scarring, atrophy producing, photosensitive dermatosis.

DLE may occur in patients with systemic lupus erythematosus (SLE).

Initial treatment comprises the avoidance of direct sunlight. Following this,

Hydroxychloroquine is the gold standard treatment. Other options include azathioprine, dapsone, thalidomide and tacrolimus.



[ Q: 1860 ] MRCPass - 2010 January

A 44 year old type I diabetic is referred for renal investigations. She has been diagnosed with multiple myeloma 5 years ago. She is currently on chemotherapy. She had proteinuria on a urine dipstick 4+ and quantification with 24 hour urine collection revealed that she had urinary protein 3.5 g/day. Ultrasound of the abdomen shows increased renal echogenicity. Investigations show :

Hb 11.5 g/dl

MCV 82 fl

WCC  $12 \times 10^9/l$

platelets  $225 \times 10^9/l$

sodium 135 mmol/l

potassium 4.5 mmol/l

Urea 16 mmol/l

Creat 225 umol/l

**What is the probable diagnosis?**

- 1- Minimal change glomerulonephritis
- 2- Diabetic nephropathy
- 3- NSAIDs induced nephropathy
- 4- AL amyloidosis
- 5- Crescentic glomerulonephritis

## Answer &amp; Comments

**Answer:** 4- AL amyloidosis

Amyloidosis is a clinical disorder caused by extracellular and or intracellular deposition of insoluble abnormal amyloid fibrils that alter the normal function of tissues.

AL amyloidosis can be caused by multiple myeloma and occurs in 5 to 15% of such patients. Apart from nephrotic syndrome,

cardiomyopathy, polyneuropathy and gut involvement are common presentations with AL amyloid.



[ Q: 1861 ] MRCPass - 2010 January

A 68-year-old woman presents with a two month history of electric shock like pains on the right side of her face and jaw . She describes having several episodes a day which, each lasting for several minutes up to 2 hours. A recent dental check was normal. Neurological examination is unremarkable.

*What is the most suitable medication for prophylaxis?*

- 1- Amitriptyline
- 2- Sodium valproate
- 3- Carbamazepine
- 4- Phenytoin
- 5- Gabapentin

#### Answer & Comments

Answer: 3- Carbamazepine

The clinical history is typical for trigeminal neuralgia.

Carbamazepine is regarded by most as the medical treatment of choice. The American Academy of Neurology published a practice parameter that concluded that carbamazepine is effective in controlling pain of patients with classic trigeminal neuralgia, and that oxcarbazepine is probably effective. Baclofen, lamotrigine, and pimozone were rated as possibly effective. The practice parameter stated that there was insufficient evidence to support or refute efficacy of clonazepam, gabapentin, phenytoin, tizanidine, topical capsaicin, or valproate for pain control in patients with classic trigeminal neuralgia



[ Q: 1862 ] MRCPass - 2010 January

A 45 year old lady has had a renal transplant 2 weeks ago. She is complaining of fevers, lethargy and diarrhea 3-4 times a day. She is on the following medications: cyclosporine A 250mg bd, azathioprine 75mg od and prednisolone 20mg od.

On examination, she has a blood pressure of 115 / 75 mmHg and a temperature of 37.8 C. Her abdomen is soft and the area over the renal transplant is mildly tender. The urine output is normal. An ultrasound scan of the kidneys does not show any abnormality that points towards the cause.

Results show :

Hb 11.5 g/dl,

WCC  $11 \times 10^9/l$ ,

platelets  $230 \times 10^9/l$

sodium 135 mmol/l

potassium 4.5 mmol/l

urea 7 mmol/l

creatinine 110 mmol/l (90 immediately post transplant)

Urine dipstick : protein -

Blood +

*What is the likely cause of this presentation?*

- 1- Allopurinol toxicity
- 2- Coronary artery disease
- 3- Cyclosporin toxicity
- 4- CMV infection
- 5- Acute rejection

#### Answer & Comments

Answer: 4- CMV infection

CMV infection is a multifaceted phenomenon with a variety of direct and indirect effects in the organ transplant recipient.

The symptomatology for clinical infectious disease (ie, fever, pneumonia, GI ulcers,

hepatitis) ranges from the mild, subclinical case to life-threatening multi-organ disease. Most cases of symptomatic CMV infection can be characterized by a self-limiting syndrome of episodic fever spikes for a period of 3 to 4 weeks, arthralgias, fatigue, anorexia, abdominal pain, and diarrhoea. Ganciclovir is the most commonly used agent for the prevention of CMV infection.

Acute rejection is usually associated with a rise in creatinine and tenderness over the transplant graft. In this case, the systemic symptoms suggest that CMV infection is more likely than acute rejection. Cyclosporin toxicity is also unlikely as the creatinine and potassium are not significantly changed.



[ Q: 1863 ] MRCPass - 2010 January

*Which one of the following factors is most useful as a predictor for determining the risk of sudden death in a patient with hypertrophic cardiomyopathy?*

- 1- Family history of sudden death
- 2- Left ventricular outflow gradient > 30mmHg
- 3- Ejection fraction
- 4- Blood pressure volatility on physical exertion
- 5- Septal wall thickness > 3.0 cm

#### Answer & Comments

**Answer:** 5- Septal wall thickness > 3.0 cm

Non-sustained ventricular tachycardia, syncope, abnormal blood pressure response to exercise, family history of sudden death, and massive left ventricular (LV) hypertrophy are all risk factors for sudden death in hypertrophic cardiomyopathy.

However, septal wall thickness is the most important predictor of sudden death. The greater thickness of septum, more likely there is risk of cardiac arrhythmias (> 3 cm is significant).



[ Q: 1864 ] MRCPass - 2010 January

A 42-year-old woman is brought to the hospital by her husband. He reports that she has had an argument with their son which resulted in the son running away. Since the event, she has been very stressed and suddenly has stopped talking completely. Clinical examination of her throat and chest is unremarkable.

*Which one of the following terms best describes this presentation?*

- 1- Akinetic mutism
- 2- Depression
- 3- Expressive dysphasia
- 4- Schizophasia
- 5- Psychogenic aphonia

#### Answer & Comments

**Answer:** 5- Psychogenic aphonia

The two most likely answers are either akinetic mutism or psychogenic aphonia.

Psychogenic aphonia or aphasia, is the loss of language due to a non-organic or psychiatric cause. It is the more likely answer due to the stressful event precipitating aphonia.

Akinetic mutism is a variety of stupor in which the patient is unable to talk or carry out purposeful behaviour but may

lie with eyes open, seemingly unaware of what is going on. It results from bilateral damage to the orbital surface of the frontal lobes, such as anterior cerebral artery stroke. The patient appears awake and has normal ocular movement but does not speak and has minimal motor response to painful stimulation. It can be associated with anterior cerebral artery stroke.



[ Q: 1865 ] MRCPass - 2010 January

A 75 year-old female was seen in the Emergency department with a 2 day history of

headaches and fever. On examination, the patient had a temperature of 38.5 °C. There was also evidence of meningism with a positive Kernig's sign. Tone, power and reflexes were normal apart from general weakness. There was no sensory deficit. A lumbar puncture was performed. CSF showed 100 white cells (90% lymphocytes), protein 0.9 (<0.5) and glucose 3.3, plasma glucose 7.5.

*What is the diagnosis?*

- 1- Gullain barre syndrome
- 2- Listeria meningitis
- 3- Tuberculous meningitis
- 4- Poliomyelitis
- 5- HSV encephalitis

#### Answer & Comments

Answer: 3- Tuberculous meningitis

In Tuberculous meningitis, Fever, headache, confusion and meningism are presenting features.

Meningism is absent in a fifth of patients with TB meningitis.

The CSF usually has a high protein, low glucose and a raised number of lymphocytes as seen in this patient.

Acid-fast bacilli are sometimes seen on a CSF smear, but more commonly, M. tuberculosis is grown in culture.

In this patient, HSV is unlikely as the protein is high, and listeria should cause a picture with more polymorphonuclear white cells in the CSF



[ Q: 1866 ] MRCPass - 2010 January

*Which one of the following techniques is used to detect RNA using a labelled DNA probe for hybridisation?*

- 1- Northern blotting
- 2- Southern blotting

- 3- Eastern blotting
- 4- Western blotting
- 5- Polymerase chain reaction

#### Answer & Comments

Answer: 1- Northern blotting

The northern blot is a technique used in molecular biology research to study gene expression by detection of RNA in a sample.

Northern blotting involves the use of electrophoresis to separate RNA samples by size, and detection with a hybridization probe (either DNA or RNA) complementary to part gene sequence.



[ Q: 1867 ] MRCPass - 2010 January

A 42 year old woman presents with breathlessness. She has a history of pulmonary fibrosis associated with connective tissue disease. Her lung function tests show :

FVC (l) (% predicted) 2.28 (66%)

FEV1 (l) (% predicted) 2.04 (70%)

FEV1/FVC (%) 89

total lung capacity (TLC) = 2.9 L (70%)

TLCO mmol/kPa/min (% predicted) 8.5 (110)

KCO mmol/kPa/min/l (% predicted) 4.4 (150)

*What is the diagnosis?*

- 1- Pulmonary haemorrhage
- 2- Pulmonary embolism
- 3- Pleural effusion
- 4- Emphysema
- 5- Diaphragmatic weakness

#### Answer & Comments

Answer: 1- Pulmonary haemorrhage

The lung function shows a restrictive picture, reduced FEV1 and FVC, which are consistent with the underlying connective tissue disease.

However, as well as a slightly increased TLCO, there is significantly increased KCO (transfer factor) which suggests pulmonary haemorrhage.

Transfer factor for carbon monoxide (TLCO) is a useful investigation in alveolar haemorrhage. It is actually the product of alveolar volume and carbon monoxide transfer coefficient (KCO). The alveolar volume is mildly reduced because of alveolar filling with blood, and KCO is considerably increased because the inhaled CO reacts with extravascular haemoglobin. An increased TLCO with considerably increased KCO and mildly reduced alveolar volume are characteristic of pulmonary haemorrhage.



[ Q: 1868 ] MRCPass - 2010 January

A 22 old student nurse complained of severe itching and swelling in the hands, several minutes after wearing gloves. This has occurred before 10 years ago when he first put a set of gloves on. On examination, there was a flexural rash and swelling in the hands.

*What is the diagnosis?*

- 1- Contact dermatitis
- 2- Systemic lupus erythematosus
- 3- C1 esterase inhibitor deficiency
- 4- Latex allergy
- 5- Anaphylaxis

#### Answer & Comments

Answer: 4- Latex allergy

The quick reaction in this case suggests latex allergy, whilst in contact dermatitis the skin changes will be slower to develop.

An allergy to latex (the natural rubber latex protein in rubber) is an immediate hypersensitivity (IgE mediated) reaction.

This means that the speed of onset of features of a latex allergy occur over a short period of

time (seconds+ (up to 6 hours)). Dermatological manifestations include itching, burning skin and urticaria. There may be associated angioedema and even anaphylaxis (with bronchospasm or hypotension).

There are two types of contact dermatitis : allergic and irritant. Allergic contact dermatitis requires prior sensitization of the skin to a specific allergen. T lymphocytes become specially sensitised to the allergen, leading to a dermatitis reaction. It is an example of a type IV hypersensitivity reaction. Irritant contact dermatitis is a result of direct damage to the skin by the provoking agent. No prior exposure to the agent is necessary.



[ Q: 1869 ] MRCPass - 2010 January

A 60-year-old man is admitted with chest pain to the Emergency Department. He has a past medical history of type 2 diabetes, hypertension and high cholesterol. His regular medications includes simvastatin, bisoprolol, glibenclamide and metformin. An ECG shows ST elevation in the anterior leads and he is referred for primary angioplasty. Following the procedure, he was transferred to the Coronary Care Unit (CCU). He has a blood glucose measurement of 15 mmol/l.

*Which drug regime should be commenced?*

- 1- Continue metformin and glibenclamide at same dose
- 2- Stop metformin and increase dose of glibenclamide
- 3- Subcutaneous insulin: basal-bolus regime
- 4- Subcutaneous insulin: biphasic insulin regime
- 5- Intravenous sliding scale insulin

#### Answer & Comments

Answer: 5- Intravenous sliding scale insulin

It has been shown from previous trials (e.g. DIGAMI study) that insulin based glucose management leads to improved outcomes in

type 2 diabetes post myocardial infarction. Good glycaemic control can be achieved with a sliding scale insulin regime or Glucose Insulin Potassium (GIK) regime.



[ Q: 1870 ] MRCPass - 2010 January

A 30 year old lady has recurrent episodes of lip swelling and is suspected of having hereditary angioedema.

*Which of the following is deficient in patients with the condition?*

- 1- C3
- 2- C6
- 3- C1 esterase inhibitor
- 4- Heat shock protein type 1
- 5- Histamine degradation protein (HDP)

#### Answer & Comments

Answer: 3- C1 esterase inhibitor

In C1 esterase inhibitor deficiency, swelling of the face, stridor and limbs can develop.

In C1 esterase inhibitor deficiency, the complement factors C2 and C4 are low and C1 esterase inhibitor level is also low. Episodes can be precipitated by trauma or even an allergen such as peanuts.



[ Q: 1871 ] MRCPass - 2010 January

A 39-year-old man presented with a 1 week history of right sided neck pain with associated headache, gradual in onset and not associated with visual symptoms. The pain had no diurnal variation, was not associated with premonitory symptoms, fever or vomiting. There were no known precipitating factors and no history of trauma.

His wife also mentioned that his right eye looked funny. There was no associated limb weakness or sensory symptoms. He was started on Sumatriptan by the general practitioner but it did not relieve the pains.

On examination, he was afebrile, his blood pressure was 130/80 mm Hg and pulse was 72 per minute and regular. He had partial ptosis of his right eye, conjunctival congestion and miosis. His funduscopy, visual acuity and eye movements were normal. The rest of his neurological examination was normal. There was no carotid bruit. There were no signs of meningism nor a rash.

*What investigation should be done?*

- 1- Skull X ray
- 2- MRI of the head
- 3- MRI and MRA of the neck
- 4- CT head
- 5- EEG

#### Answer & Comments

Answer: 3- MRI and MRA of the neck

The diagnosis is Horner's syndrome.

This patient needs to have carotid artery dissection excluded due to the acute nature of the presentation and conjunctival congestion. However, a space occupying lesion, a brain stem CVA, trauma to the neck and also Pancoasts' tumour may all cause Horner's syndrome.



[ Q: 1872 ] MRCPass - 2010 January

A 72 years old woman was admitted with complaints of anorexia, nausea and lethargy for last 4 months. She had history of fall 12 months back after which she sustained mild compression fracture of L1 vertebra. After the fall, she has had persistent backaches. On examination, she was pale, BP was 160/90 mmHg and bilateral pedal oedema. There was tenderness over the upper lumbar region.

Blood tests showed:

Hb 10.5 g/dl, WCC  $7 \times 10^9/l$ , platelets  $220 \times 10^9/l$ , ESR 90 mm/hr, sodium 135 mmol/l, potassium 4.2 mmol/l, urea 16 mmol/l,



creatinine 240  $\mu\text{mol/l}$ . IgA 3.2 (0.5-4.0) g/l , IgG 23 (5.0-13.0) g/l, IgM 2.3 (0.3-2.2) g/l.

Routine urine examination showed urine albumin trace, urine protein/creatinine ratio 2.7 and urinary Bence Jones protein was positive.

*What is the likely diagnosis?*

- 1- Waldenstrom's macroglobulinaemia
- 2- Multiple myeloma
- 3- Chronic myeloid leukaemia
- 4- Acute lymphocytic leukaemia
- 5- Osteoporosis

#### Answer & Comments

Answer: 2- Multiple myeloma

The presence of unexplained anemia, kidney dysfunction, a high erythrocyte sedimentation rate (ESR) and a high serum paraprotein with bence jones proteinuria suggests multiple myeloma.



[ Q: 1873 ] MRCPass - 2010 January

A 20 year old woman presented 6 hours after taking 30g of Paracetamol.

*Which of following factors is likely to predict an increased risk of hepatotoxicity from Paracetamol?*

- 1- Anorexia nervosa
- 2- Consumption of 20 units of alcohol since taking Paracetamol
- 3- Gilbert's disease
- 4- Ingestion of Amitriptyline
- 5- Smoking 20 cigarettes per day

#### Answer & Comments

Answer: 1- Anorexia nervosa

High risk groups in paracetamol overdose include malnourished patients (anorexia nervosa/bulimia nervosa), patients taking

enzyme inducing drugs (eg carbamazepine, phenytoin rifampicin St John's Wort), patients induced liver enzymes due chronic ethanol abuse HIV positive patients.



[ Q: 1874 ] MRCPass - 2010 January

A 50 year old patient with polycystic kidneys is undergoing investigations for a renal transplant.

His blood group is O positive. His brother who is 45 year old, is being considered as a transplant donor. The brother has a normal ultrasound of the kidneys with no renal cysts and is blood group A positive.

*Why is he unsuitable to become a kidney donor?*

- 1- Risk of developing polycystic kidneys
- 2- ABO incompatibility
- 3- Rhesus incompatibility
- 4- Risk of CMV reaction
- 5- HLA incompatibility leading to acute rejection

#### Answer & Comments

Answer: 2- ABO incompatibility

There are glycoproteins in both groups A and B which may stimulate antibodies towards them.

People with blood group A cells have antibodies to B, a donor with group B blood is not compatible with a group A recipient. Similarly, those with blood group B have antibodies to group A, indicating a type A donor is not compatible with a type B recipient. Individuals with type AB cells lack such antibodies and are therefore compatible with any potential donors (with regard to blood type matching).

As in the case above, a patient with blood group O will have antibodies against both those with group A and B and therefore require blood group O kidney donors.

Rhesus grouping is not as important in transplant blood group matching but a rhesus positive patient (particular Rhesus D subgroup) may cause a rhesus negative patient to generate antibodies and cause subsequent rejection.

HLA matching is less important than ABO compatibility in transplantation.



[ Q: 1875 ] MRCPass - 2010 January

A 38-year-old man presented with visual symptoms which were new. He has no relevant past medical history.

On examination, he had ptosis, miosis and anhydrosis of his right eye, conjunctival congestion and miosis.

*What investigation should be done?*

- 1- Chest X ray
- 2- CT scan of the head
- 3- MRI of the head
- 4- Ultrasound of the neck
- 5- EEG

#### Answer & Comments

Answer: 1- Chest X ray

The diagnosis is Horner's syndrome. The first investigation should be a chest X ray which will Pancoasts' tumour or a cervical rib which can cause compression of the sympathetic nervous supply.





[ Q: 1876 ] MRCPass - 2010 May

A 43 year old female patient presented in to clinic with a generalised blistering rash on the arms and legs. Clinical examination revealed tense skin blisters with some generalised desquamation.

*What should be done to confirm the diagnosis?*

- 1- Skin scrapings
- 2- Skin swab for microscopy and sensitivity
- 3- Blister fluid to be sent for viral culture
- 4- Immunofluorescence of skin biopsy
- 5- Trial of steroids

#### Answer & Comments

Answer: 4- Immunofluorescence of skin biopsy

The diagnosis is bullous pemphigoid, which is a chronic, autoimmune, subepidermal, blistering skin disease that rarely involves mucous membranes.

Bullous pemphigoid is characterized by the presence of immunoglobulin G (IgG) autoantibodies in the hemidesmosomal area. This manifests as tense blisters. Direct immunofluorescence of a skin biopsy usually demonstrate IgG and complement C3 deposition in a linear band at the dermal-epidermal junction.



[ Q: 1877 ] MRCPass - 2010 May

A 52-year-old female presented with two month history of an itchy rash which appeared on her wrist and on the upper arms. There was no relevant past medical, family or drug history.

On examination there were annular flat violaceous lesions on the arms.

*Where else are lesions likely to be found?*

- 1- Behind the ears
- 2- Buccal mucosa

- 3- Plantar surface
- 4- Perineal area
- 5- Scalp

#### Answer & Comments

Answer: 2- Buccal mucosa

There is an increased incidence of lichen planus in several diseases in which there is autoimmune phenomena.

Lichen planus (LP) is a pruritic, papular eruption characterized by its violaceous color; polygonal shape; and, sometimes, fine scale.

The initial lesion is usually located on the flexor surface of the limbs, such as the wrists.

After a week or more, a generalized eruption develops with maximal spreading within 2-16 weeks. Oral lesions such as on the buccal mucosa may be present and either asymptomatic or have a burning sensation, or they may even be painful if erosions are present. Characteristic fine, white lines, called Wickham stria, are often found on the papules.



[ Q: 1878 ] MRCPass - 2010 May

A patient was given magnesium sulphate for treatment of acute asthma. Given that the drug's half life is 4 hours, *what proportion of the drug is left after 20 hours?*

- 1- 3.125%
- 2- 6.25%
- 3- 25%
- 4- 66%
- 5- 97%

#### Answer & Comments

Answer: 1- 3.125%

The proportion eliminated are:

4 hrs - 50%

4 hrs - 25%

4hrs - 12.5%

4hrs - 6.25%

4 hrs - 3.125%

It adds up to 96.875 eliminated, or 3.125% of the drug left.



[ Q: 1879 ] MRCPass - 2010 May

A patient is being worked up for renal transplantation.

*Which one of the following HLA compatibility is the most important?*

1- A

2- B

3- C

4- D

5- G

#### Answer & Comments

Answer: 4- D

ABO blood group matching is the most important, and HLA matching is a relatively minor predictor of transplant outcomes.

However, among HLA matches, DR matching has a greater effect than that of B or A. A study found that HLA-DR mismatches (and the number of rejection episodes) correlated with poor long-term survival



[ Q: 1880 ] MRCPass - 2010 May

A 65-year-old woman presented with an ulcer over the left ankle, which had developed over the previous 6 months. She had a history of right deep vein thrombosis five years previously. On examination she had a superficial slough-based ulcer, 4 cms in diameter, over the medial malleolus with no evidence of cellulitis.

*Which one of the following is the most appropriate next investigation?*

1- Ankle-brachial pressure index

2- Lower limb arteriogram

3- Right leg venogram

4- Venous duplex ultrasound scan

5- Swab of the ulcer

#### Answer & Comments

Answer: 1- Ankle-brachial pressure index

This is likely to be a venous ulcer due to venous insufficiency.

However, excluding arterial disease with the anklebrachial pressure index is important to ensure that any further treatment (compression bandaging) will not exacerbate symptoms. For cases with a clinical suspicion of DVT then duplex ultrasound is indicated.



[ Q: 1881 ] MRCPass - 2010 May

A 25 year old man has pain in his elbow and arm. He describes an injury whilst using a hammer. On examination, there is loss of sensation in the medial (little finger and half of ring finger) of the hand and loss sensation in medial side of the forearm. after elbow injury.

*What is the likely injury?*

1- Axillary nerve injury

2- Median nerve injury

3- Ulnar nerve injury

4- Lateral epicondylitis

5- Tennis Elbow

#### Answer & Comments

Answer: 3- Ulnar nerve injury

Sensation is supplied by the ulnar nerve to the fifth finger and the ulnar part of the fourth finger.

Claw hand is typical of ulnar nerve injury.

The axillary nerve supplies the deltoid and teres minor as well as the skin over the deltoid.

The median nerve supplies the lateral two lumbricals, opponens pollicis, abductor pollicis brevis and flexor pollicis brevis (LOAF). Flexion of the fingers and thumb abduction is supplied by the median nerve.

Lateral Epicondylitis, or tennis elbow is caused by inflammation of the common extensor origin, at the lateral epicondyle of the humerus. It causes pain in the elbow during movement.



[ Q: 1882 ] MRCPass - 2010 May

A healthcare worker gets a deep needlestick injury during phlebotomy. This was from an asymptomatic HIV positive patient who is not on anti-retroviral therapy.

*What is the next step?*

- 1- Give antiretroviral therapy with 3 drugs for one month
- 2- Give antiretroviral therapy with 3 drugs for three months
- 3- HIV antibody test immediately
- 4- Intravenous immunoglobulins
- 5- No treatment required

#### Answer & Comments

**Answer:** 1- Give antiretroviral therapy with 3 drugs for one month

In this case the risk is not well known (the viral load and CD4 count of the patient who was HIV positive).

It is therefore best to give a basic regimen of post exposure prophylaxis. The basic regimen consists of : 4 weeks of zidovudine (600 mg/d in 2-3 divided doses) , lamivudine (150 mg twice daily) and one other agent. Exposure to patients with high risks such as full blow n

AIDS or high viral loads should be with an extended regimen.



[ Q: 1883 ] MRCPass - 2010 May

A 50-year-old man with a past medical history of hypertension was investigated as an outpatient due to symptoms of lethargy and nausea. Blood results reveal : sodium 137 mmol/l, potassium 4.5 mmol/l, urea 22 mmol/l, creatinine 340 µmol/l. Ultrasound demonstrated a left kidney of 8.9 cm and right at 9.3 cm.

*What is the best investigation to perform next?*

- 1- MR angiography
- 2- Renal angiography
- 3- Repeat renal ultrasound
- 4- Renal biopsy
- 5- CT scan of the kidney

#### Answer & Comments

**Answer:** 1- MR angiography

The history of hypertension and small kidneys suggests renovascular disease or renal artery stenosis.

The best follow on tests are MR angiogram or isotope (MAG-3) nuclear imaging to evaluate renal arterial anatomy and function as these tests are less invasive. Once the diagnosis is certain, angiography with a view to angioplasty should then be considered.



[ Q: 1884 ] MRCPass - 2010 May

A 68-year-old woman was admitted to hospital because of facial weakness and limb weakness. The patient noticed weakness of the right arm and leg and diplopia on waking in the morning. She had been diabetic and hypertensive for the past 20 years. Her medications included gliclazide, metformin and insulin. On admission she was alert and



had a blood pressure of 155/75 mm/Hg. Cranial examination revealed a left 3rd nerve palsy, dilated pupil on the left side and normal ocular fundi. Examination of motor system showed right-sided spastic weakness with grade 4/5 power. Deep tendon reflexes were brisk on the right side with upgoing plantar response.

*Where is the lesion?*

- 1- Medial longitudinal fasciculus
- 2- Posterior cerebellar
- 3- Midbrain
- 4- Pons
- 5- Medulla

#### Answer & Comments

Answer: 3- Midbrain

Most of the lesions causing 3rd cranial nerve nucleus are from dorsal midbrain infarction.

This patient has Weber syndrome, which results from a slightly more ventral lesion at the level of the third cranial nerve fascicles in the mid brain, with involvement of the cerebral peduncle giving rise to contralateral hemiplegia or hemiparesis along with ipsilateral third cranial nerve palsy.



[ Q: 1885 ] MRCPass - 2010 May

A 30 year old man has had a year's history of bilateral hip pains and back pains. There is no past medical history of trauma to the back. Non steroidal anti-inflammatory drugs helped to relieve his symptoms. He also has reduced chest expansion and is unable to touch the feet with his fingers when bending.

*What is the best investigation to confirm the diagnosis?*

- 1- CT scan of the chest
- 2- X ray of the sacroiliac joints
- 3- Lung function tests
- 4- HLA B27 testing

5- Autoimmune screen

#### Answer & Comments

Answer: 2- X ray of the sacroiliac joints

This case is most likely ankylosing spondylitis, which typically causes restricted spinal movements due to chronic inflammatory changes.

Pain and stiffness in the lower back or buttocks, especially in the morning is typical of sacroilitis. X rays will help to confirm the diagnosis.



[ Q: 1886 ] MRCPass - 2010 May

*Which one of the following nerve/roots is affected if there is global wasting of small muscles of hand?*

- 1- Median nerve
- 2- Radial nerve
- 3- Ulnar nerve
- 4- C7
- 5- T1

#### Answer & Comments

Answer: 5- T1

Global wasting of hand indicate median and ulnar nerve lesions; probably, with damage to T1 root. In the hand, the median nerve supplies the lateral two lumbricals, opponens pollicis, abductor pollicis brevis, and flexor pollicis brevis.

Wasting of the interossei (prominent guttering of the back of the hand), of the web space between thumb and index finger, and softening and flattening of the hypothenar eminence with sparing of abductor pollicis brevis indicates an ulnar nerve lesion.



[ Q: 1887 ] MRCPass - 2010 May

A 16-year-old girl who had been

prescribed theophylline tablets 225 mg twice a day took an overdose of 40 tablets, following a stressful event.

She presented to hospital 1 hour and 30 minutes after the overdose. Her BP was 100/70 and she had a sinus tachycardia with a heart rate of 130.

*What is the best management option?*

- 1- Activated charcoal
- 2- Gastric lavage
- 3- Whole bowel irrigation
- 4- Esmolol
- 5- Haemodialysis

#### Answer & Comments

Answer: 1- Activated charcoal

It is too late for gastric lavage, hence activated charcoal is the best option here.

Theophylline is absorbed rapidly and completely after oral administration. Therapeutic serum levels range from 10-20 mcg/mL. Toxic levels are considered to be higher than 20 mcg/mL; However, adverse effects may be evident within the normal therapeutic range. Severe complications including cardiac dysrhythmias, seizures, and death can be observed with the levels

of 80-100 mcg/mL. The therapeutic options are as below :

Gastric lavage (unless contraindicated) if the patient has recently (<1 h) ingested a significant amount or a sustained-release preparation of theophylline.

Multidose activated charcoal (MDAC) enhances elimination of theophylline. It is a very effective method of elimination, and it is considered the mainstay treatment of theophylline toxicity.

Consider whole-bowel irrigation (WBI) in patients with exposure to sustained-release theophylline preparations.



[ Q: 1888 ] MRCPass - 2010 May

A 16-year-old boy was admitted to hospital after a blackout at dentist. His mother described how he looked pale and then blacked out as a dentist began performing a filling when he was sat in a chair. His arm jerked for a few seconds and following the event he was incontinent. He awoke after a minute was oriented. He was not confused but did not recall what happened.

*What is the likely diagnosis?*

- 1- Complex partial seizure
- 2- Pseudoseizure
- 3- Stokes-Adams attack
- 4- Tonic-clonic seizure
- 5- Vasovagal syncope

#### Answer & Comments

Answer: 5- Vasovagal syncope

Vasovagal syncope is common during a stressful event such as dental procedures,

There is no post event confusion and he recovered very quickly, hence this makes a genuine seizure unlikely. The description of pallor, brief syncope and also shaking of arms and limbs is consistent with vasovagal syncope which is commonly mistaken for a seizure. It can be associated with urinary incontinence which is not specific for epileptic seizures.



[ Q: 1889 ] MRCPass - 2010 May

A 32 year old female patient was referred by the GP for assessment of unequal sized pupils. On examination, it was found that the right pupil was larger than the left. The pupillary reflex on the right eye was also sluggish both to light and accommodation. After performing the accommodation reflex, the pupil on the right was smaller than the left for several minutes. Eye movements and fundoscopy were normal.

*What is the diagnosis?*

- 1- Argyll Robertson pupil
- 2- Horner's syndrome
- 3- Adie Holmes pupil
- 4- Myasthenia gravis
- 5- 3rd nerve palsy

#### Answer & Comments

**Answer:** 3- Adie Holmes pupil

Holmes-Adie syndrome (HAS) is a neurological disorder affecting the pupil of the eye and the autonomic nervous system.

It is characterised by one eye with a pupil that is larger than normal and constricts slowly in bright light (tonic pupil), along with the absence of deep tendon reflexes, usually in the Achilles tendon.

Once the pupil has constricted it remains small for an abnormally long time (tonic pupil), hence in this case after the pupils were constricted following the accommodation test, the right adie pupil remained smaller than the left.



[ Q: 1890 ] MRCPass - 2010 May

A 30-year-old Caucasian woman admitted has a history of widespread, pruritic, erythematous skin rash, joint pains and renal disease. She recently had a baby with congenital heart block. Laboratory investigations revealed mild leucopenia (white cell count  $3.25 \times 10^9/\text{ml}$ ) and thrombocytopenia (platelets  $140 \times 10^9/\text{ml}$ ). Erythrocyte sedimentation rate was increased (65 mm/h).

*Which antibody is likely to be positive?*

- 1- Anti Jo 1
- 2- Anti double stranded DNA
- 3- Anti Ro
- 4- Anti centromere
- 5- ANCA

#### Answer & Comments

**Answer:** 3- Anti Ro

The anti Ro antibody is associated with Sjogren's syndrome, SLE and neonatal lupus.

In neonatal lupus, congenital heart block often occurs in babies born to women with the antibody (both anti Ro and anti La antibodies).



[ Q: 1891 ] MRCPass - 2010 May

A 52 year old patient with syringomyelia has a syrinx demonstrate unilaterally at the level of C4-T1.

*What is the likely manifestation for the patient?*

- 1- Loss of pinprick and vibration sense in the hand on the contralateral
- 2- Loss of pain and temperature sensation in the hand on contra lateral side
- 3- Winging of the scapula in the contralateral side
- 4- Hand weakness in the contralateral side
- 5- Leg weakness in the contralateral side

#### Answer & Comments

**Answer:** 2- Loss of pain and temperature sensation in the hand on contra lateral side

Syringomyelia is a chronic disorder characterized by the presence of a longitudinal, fluid filled cavities (syrinx) within the spinal cord.

The question tests knowledge of anatomical pathways. This is a one sided lesion of the spinal cord. Such a lesion will cause:

a unilateral motor deficit below the lesion (the corticospinal tract decussates at the medulla)

a unilateral reduction in vibration sense (dorsal columns decussates at the medulla)

a contralateral pain and temperature sensory deficit (the spinothalamic tract decussates at the same level at the spinal cord).

Winging of the scapula (C5-7) and hand weakness may both occur, but in this case is on the wrong side.



[ Q: 1892 ] MRCPass - 2010 May

An 18-year-old woman is admitted to the resuscitation room with respiratory distress and a GCS score of 3/ 15.

She had been found unconscious at home. Blood gases and blood test results taken on admission show the following:

pH 6.92

pCO<sub>2</sub>- 2.5 kPa

pO<sub>2</sub> - 16.8 kPa

Na<sup>+</sup> 143 mmol/l

K<sup>+</sup> 4.6 mmol/l

Chloride 101 (95-107) mmol/l

Bicarbonate 3.2 (20-28) mmol/l

Urea 5.2 mmol/l

Creatinine 60 µmol/l

Glucose 7 mmol/l

Methanol 523 mg/dl

*What is the best treatment option?*

- 1- Observation only
- 2- Insulin sliding scale
- 3- Haemodialysis
- 4- Ethanol
- 5- Fomepizole

#### Answer & Comments

Answer: 3- Haemodialysis

In this case there is severe neurological signs and the patient has a high methanol level with metabolic acidosis, hence haemodialysis is the best option.

Methanol is a commonly used organic solvent, the ingestion of which can cause significant toxicity. It is a constituent in many commercially available industrial solvents and in poorly adulterated alcoholic beverages. Toxicity usually results in metabolic acidosis, neurologic damage (ataxia, coma), blindness (formic acid accumulates within the optic nerve).

Antidote therapy is directed towards delaying methanol metabolism until the methanol is eliminated from the system either naturally or via dialysis. This is often accomplished in 2 ways: ethanol or fomepizole. Ethanol is also metabolized by ADH, and the enzyme has 10-20 times higher affinity for ethanol compared with methanol.

Fomepizole is also metabolized by ADH; However, its use is limited because of high costs and lack of availability.

Hemodialysis can easily remove methanol and formic acid. Indications include (1) greater than 30 mL of methanol ingested, (2) serum methanol level greater than 20 mg/dL, (3) observation of visual complications, and (4) no improvement in acidosis despite repeated sodium bicarbonate infusions.



[ Q: 1893 ] MRCPass - 2010 May

A 35 year old woman has longstanding breathlessness. Previous investigations have shown that she has multiple chronic pulmonary emboli.

*Which one of the following would be a consistent finding?*

- 1- Normal pulmonary wedge pressure
- 2- Increased inspiratory reserve volume
- 3- Decreased transfer factor
- 4- Increased lung compliance
- 5- low FEV<sub>1</sub>/FVC ratio (obstructive picture)

## Answer &amp; Comments

**Answer:** 3- Decreased transfer factor

Transfer factor and alveolar volume are significantly lower in patients with pulmonary emboli.

Pulmonary wedge pressure is increased in pulmonary veno-occlusive disease.



[ Q: 1894 ] MRCPass - 2010 May

A 25 year old woman presented with confusion and severe headache following a night out at a club. On examination, the following were found heart rate: 150 beats/min with sinus tachycardia on the monitor, blood pressure: 160/90 mmHg, respiratory rate: 30, oxygen saturation by pulse oximetry was 98%. Her GCS score was 14/15.

*Which one of the following conditions is most likely to cause this?*

- 1- Cluster headache
- 2- Meningitis
- 3- Paracetamol overdose
- 4- Ecstasy overdose
- 5- Venous sinus thrombosis

## Answer &amp; Comments

**Answer:** 4- Ecstasy overdose

MDMA (ecstasy) is a popular drug of abuse for its combined properties inherent to those of amphetamines and hallucinogens.

Symptoms of MDMA ingestion include an altered mental status, tachycardia, tachypnea, sweating and hyperthermia. Severe cases can progress to rhabdomyolysis, acute renal failure, cardiac collapse, and disseminated intravascular coagulation.



[ Q: 1895 ] MRCPass - 2010 May

A 45 year old man is on lithium

tablets for depression and has recently been found to be hypertensive with a blood pressure of 170 / 95 mmHg.

*What should be the preferred drug?*

- 1- Verapamil
- 2- Doxazosin
- 3- Amlodipine
- 4- Hydrochlorothiazide
- 5- Ramipril

## Answer &amp; Comments

**Answer:** 3- Amlodipine

Diuretics may increase the amounts of lithium in the body (hydrochlorothiazide, acetazolamide, furosemide).

Other antihypertensive drugs which may increase or worsen the side effects of lithium e.g. some calcium channel blockers (i.e. verapamil, diltiazem) and Angiotensin converting enzyme inhibitors (i.e. enalapril, captopril, ramipril).

Amlodipine or doxazosin can both be used, but amlodipine should be picked first in this instance.



[ Q: 1896 ] MRCPass - 2010 May

A 65 year old female with a history of type 2 diabetes, hyperparathyroidism and osteoarthritis has recurrent knee pains. On examination, she was afebrile and found to have a right sided knee effusion. The effusion was aspirated.

*What is the likely finding in synovial fluid analysis?*

- 1- Star shaped crystals
- 2- Yellow maltese cross crystals
- 3- Positively birefringent rhomboid crystal
- 4- Positively birefringent needle shaped crystal
- 5- Negatively birefringent crystal

## Answer &amp; Comments

Answer: 3- Positively birefringent rhomboid crystal

In the case of an acute attack of arthritis (usually monoarthritis), the joint should always be aspirated.

The differential diagnosis lies between septic arthritis, gout and pseudogout. Gout and pseudogout are the 2 most common crystal-induced arthropathies. These are debilitating illnesses in which pain and joint inflammation are caused by the deposition of crystals within the joint space. Many cases of pseudogout are idiopathic, but it has also been associated with aging, trauma, and many different metabolic abnormalities like hyperparathyroidism (as in this case) and hemochromatosis. Pseudogout is an inflammation caused by the deposition of positively birefringent rhomboid shaped calcium pyrophosphate dihydrate (CPPD) crystals. Gout crystals are negatively birefringent.



[ Q: 1897 ] MRCPass - 2010 May

A 62 year old man fell over and lost consciousness for several minutes. He was brought to hospital and was initially alert. However, 2 hours later, whilst he was being admitted, he complained of a headache and his GCS deteriorated from 15 to 8.

*What is the most likely diagnosis?*

- 1- Subarachnoid haemorrhage
- 2- Subdural haematoma
- 3- Extradural haematoma
- 4- Diffuse axonal injury
- 5- Epileptic seizure

## Answer &amp; Comments

Answer: 2- Subdural haematoma

The patient who fell over may have injured his head and the most likely cause of a further

sudden deterioration in conscious level with an associated headache is a subdural haematoma.

This patient needs an urgent CT scan in view of the deterioration.



[ Q: 1898 ] MRCPass - 2010 May

A 62-year-old man with a recent history of colorectal carcinoma presented to hospital with exertional dyspnea, fever and malaise. He had altered bowel habit for several weeks prior to his admission. On examination his temperature was 39.5°C, there was sinus tachycardia of 105 beats/min and respiratory rate was 32/minute. He had several splinter haemorrhages, there were clear breath sounds and a systolic murmur was heard along the apex and diastolic murmur at the right second intercostal area.

*What is the most likely infective organism?*

- 1- Streptococcus mitis
- 2- Streptococcus bovis
- 3- Streptococcus viridans
- 4- Staphylococcus aureus
- 5- Streptococcus milleri

## Answer &amp; Comments

Answer: 2- Streptococcus bovis

Strep bovis can be found in the normal flora of human gastrointestinal system.

S. bovis endocarditis is often associated with colonic carcinoma. It is the second common Streptococci causing bacterial endocarditis.



[ Q: 1899 ] MRCPass - 2010 May

A 70 year old man is assessed in the pre operative assessment clinic for a hip replacement. During the preoperative assessment was noted to have a raised lymphocyte count. On examination, he had lymphadenopathy palpable in the cervical and



axillary area. A spleen was palpable 3 cm below the costal margin.

His bloods were as follows:

Hb 11.6 g/dl

Plt  $164 \times 10^9/l$

WBC  $45.2 \times 10^9/l$

*What is the likely diagnosis?*

- 1- Acute lymphocytic leukaemia
- 2- Acute myeloblastic leukaemia
- 3- Chronic lymphocytic leukaemia
- 4- Chronic myeloblastic leukaemia
- 5- Multiple myeloma

#### Answer & Comments

Answer: 3- Chronic lymphocytic leukaemia

Chronic lymphocytic leukemia (CLL), is the most common type of leukemia and it affects B cell lymphocytes.

Most (>75%) people newly diagnosed with CLL are over the age of 50, and the majority are men. Most people are diagnosed without symptoms as the result of a routine blood test that returns a high white blood cell count. Clinical signs of lymphadenopathy and splenomegaly are associated.



[ Q: 1900 ] MRCPass - 2010 May

A 40-year-old female patient, an ex-smoker with an 8-pack-year smoking history and severe pulmonary emphysema of early onset. Her father has a diagnosis of 1-antitrypsin (AAT) deficiency. Her serum antitrypsin levels are measured to be approximately 15% of the normal range.

*Which genotype is most likely?*

- 1- ZZ
- 2- MZ
- 3- SZ
- 4- MM

5- SS

#### Answer & Comments

Answer: 1- ZZ

The commonest phenotype is Protease Inhibitor (Pi) MM (90% of the population have this).

These individuals produce normal amounts of alpha1-antiprotease. The most common form of AAT deficiency is associated with allele Z, or homozygous PiZ (ZZ). Serum levels of AAT in these patients are about 3 - 7  $\mu\text{mol/L}$  (10-15% of normal serum levels). Emphysema develops in most (but not all) individuals with serum levels less than 9  $\text{mmol/L}$ .



[ Q: 1901 ] MRCPass - 2010 May

A 34 year old lady attends clinic for evaluation of pain or swelling in the wrists, small joints of her hands or feet.

She denied morning stiffness, subcutaneous nodules or sicca symptoms. Rheumatoid arthritis is suspected. In the process of disease evaluation, HLA class is considered.

*Which HLA type is associated?*

- 1- DR2
- 2- DR4
- 3- DR3
- 4- B27
- 5- DQ8

#### Answer & Comments

Answer: 2- DR4

90% of patients with Rheumatoid arthritis have the cluster of markers known as the HLA-DR4/DR1 cluster, whereas only 40% of unaffected controls do.

The HLA-DR4 gene, has also shown involvement in Lyme disease.

Patients with HLA-DR4 are less likely to respond to antibiotics.



[ Q: 1902 ] MRCPass - 2010 May

A 52-year-old woman presents with lethargy and ankle oedema. She has a past medical history of hypertension and has recurrent joint pains. She currently takes ibuprofen and amlodipine. On examination she was pyrexial, had livedo reticularis. Her blood pressure was 175/100 mmHg.

Investigations revealed:

haemoglobin 12.2 g/dL (11.5-16.5)

white cell count  $8.2 \times 10^9 / L$  (4-11)

platelet count  $83 \times 10^9 / L$  (150-400)

urea 5 mmol/l

serum creatinine 155  $\mu\text{mol/L}$

urine dipstick analysis:

blood +

protein +++

*Which one of the following is the likely diagnosis?*

- 1- IgA nephropathy
- 2- Rheumatoid arthritis
- 3- Systemic lupus erythematosus
- 4- Polyarteritis nodosa
- 5- Wegener's granulomatosis

#### Answer & Comments

**Answer:** 3- Systemic lupus erythematosus

This patient features of suggest Systemic lupus erythematosus (SLE) with possible antiphospholipid syndrome and nephrotic syndrome.

SLE can present with many features including skin changes and vasculitic lesions, hypertension, renal involvement and alopecia. Livedo reticularis is a mottled, reticulated skin rash- usually on the lower extremities, around

the elbows, knees and ankles. Thrombocytopenia is also a common finding.



[ Q: 1903 ] MRCPass - 2010 May

A 55-year-old man with a 10-year history of DM and hypertension, presents to the renal clinic with complaints of fatigue and shortness of breath. He is known to have chronic kidney disease and has complications of diabetic retinopathy and peripheral neuropathy. He has been gradually becoming more short of breath on exertion over the last 6 months. His blood test results are:

Hb 8.5 g/dl, MCV 85 fl, WCC  $7 \times 10^9 / L$ , platelets  $220 \times 10^9 / L$ , sodium 135 mmol/l, potassium 4.6 mmol/l, urea 15 mmol/l, creatinine 310  $\mu\text{mol/L}$ , calcium 2.2 (2.25-2.7) mmol/l, phosphate 5 (0.8-8) pmol/l

*What is the best way of managing his symptoms?*

- 1- Physiotherapy to increase exercise tolerance
- 2- Erythropoietin treatment
- 3- Dialysis to improve renal function
- 4- Improve glycaemic control
- 5- Treat for pulmonary embolism

#### Answer & Comments

**Answer:** 2- Erythropoietin treatment

This patient has anaemia secondary to chronic kidney disease, and patients who have symptomatic anaemia (in this case, shortness of breath limiting exercise tolerance) should be considered for Erythropoietin treatment.

The renal association guidelines recommend that patients with CKD on ESA therapy should achieve haemoglobin between 10.5-12.5 g/dl.

<http://www.renal.org/Clinical/GuidelinesSection/AnaemiaInCKD.aspx>



[ Q: 1904 ] MRCPass - 2010 May

A 22-year-old man returns from holiday and presents to a clinic complaining of numerous scaly, hypopigmented lesions on the neck and upper trunk.

*What is the likely diagnosis?*

- 1- Chronic plaque psoriasis
- 2- Discoid eczema
- 3- Pityriasis rosea
- 4- Pityriasis versicolor
- 5- Seborrhoeic dermatitis

#### Answer & Comments

**Answer:** 4- Pityriasis versicolor

Pityriasis versicolor is caused by a superficial fungal infection by *Malassezia* species.

It usually presents as slightly scaly hypopigmented lesions. Growth is encouraged by an increase in temperature, suntan oils and is commonly seen after a sunny holiday. Pityriasis rosea usually starts with a herald patch followed by small scaly lesions following rib lines.



[ Q: 1905 ] MRCPass - 2010 May

A 27 year old lady had recently travelled to the Uganda several months ago. She complained of fevers and headache. The GP found that she had microscopic haematuria on urine dipstick. A full blood count showed Hb 10.6g/dL, MCV 82.6fl, eosinophils 0.5 (0.04-0.44) x 10<sup>9</sup>/dL.

*What should be prescribed?*

- 1- Augmentin
- 2- Praziquantel
- 3- Fluconazole
- 4- Mebendazole
- 5- Caspofungin

#### Answer & Comments

**Answer:** 2- Praziquantel

Although schistosomiasis is endemic in Africa, the Middle East, Latin America, and limited areas in Asia, the greatest risk of infection appears to come from exposure to fresh water in east Africa.

Infection results from penetration of intact skin by larvae liberated from snail intermediate hosts.

Most infected travellers are asymptomatic and at low risk of complications because of low parasite burdens, although end-organ damage may result from egg deposition. Other presentations include swimmer's itch (a popular pruritic dermatitis at the time of exposure) and Katayama fever, which is associated with the migration of schistosome larvae throughout the body (symptoms include fever, chills, malaise, headache, cough, abdominal pain, diarrhoea, urticaria, and occasionally neurological disorders).

Once egg deposition begins, clinical features include haematuria, haematospermia, urgency, frequency, terminal dysuria, salpingitis, prostatitis and genital ulcers (case history). More serious but rare complications are paraparesis, paraplegia and mass cerebral lesions. Immigrants and refugees from endemic countries are likely to have much heavier infection loads and may present with the complications of chronic fibrosis, such as ureteric obstruction and portal hypertension.

The standard treatment is praziquantel (20 mg/kg orally for two doses, four hours apart). About 10%-15% of patients require re-treatment.



[ Q: 1906 ] MRCPass - 2010 May

A 55 year old man has been diagnosed with Burkitt's Lymphoma.

*Which gene mutation is associated?*

- 1- BRAF

- 2- P 53
- 3- C-myc
- 4- N-myc
- 5- BCI-ABR

#### Answer & Comments

Answer: 3- C-myc

In Burkitt's lymphoma (associated with Epstein Barr virus), genetic translocations lead to consequent c-myc rearrangement and overexpression.

In most (approximately 90%) of the cases of Burkitt's lymphoma, a reciprocal translocation has moved the proto-oncogene c-myc from its normal position on chromosome 8 to a location close to the enhancers of the antibody heavy chain genes on chromosome 14 t(8:14).



[ Q: 1907 ] MRCPass - 2010 May

A 20-year-old woman presented with a 1-year history of progressive hair loss in patches. She has a history of eczema and hypothyroidism. On examination, in the affected hair loss areas, the skin was pale and waxy. The hair loss did not involve other body sites but she had hypopigmented areas over the arms. Blood tests show normal full blood count, renal function and also negative ANA.

*What is the likely diagnosis?*

- 1- SLE
- 2- Hypothyroidism associated hair loss
- 3- Dermatitis artefacta
- 4- Allergic contact dermatitis
- 5- Alopecia areata

#### Answer & Comments

Answer: 5- Alopecia areata

Alopecia areata is a form of hair loss from areas of the body, usually from the scalp.

The condition affects 1%-2% of the population. Hair loss may be diffuse or affect areas, and commonly affects the scalp but can also affect any hair growing part of the body. It is commonly associated with autoimmune diseases, such as hypothyroidism, SLE and also vitiligo. Steroid creams such as clobetasol, steroid injections or minoxidil are treatment options.



[ Q: 1908 ] MRCPass - 2010 May

A 56 year old patient with atrial fibrillation is on long term warfarin. He was recently diagnosed with pulmonary tuberculosis and was started on antituberculosis agents. He mentioned that his INR frequently decreased since then and the anticoagulant nurses had to increase the dose of warfarin.

*Which antituberculosis agent was most likely to have been responsible for the decrease in INR?*

- 1- Rifampicin
- 2- Pyrazinamide
- 3- Ethambutol
- 4- Isoniazid
- 5- Streptomycin

#### Answer & Comments

Answer: 1- Rifampicin

Rifampicin is a liver enzyme inducer and isoniazid is a liver enzyme inhibitor.

Liver enzyme inducers are likely to reduce the effect of warfarin, causing a decreased INR.



[ Q: 1909 ] MRCPass - 2010 May

*Which one of the following is the mechanism of action of the drug, clopidogrel?*

- 1- Monoclonal antibody
- 2- Cyclooxygenase inhibitor
- 3- Glycoprotein IIb/IIIa inhibitor

- 4- ADP antagonist
- 5- Low molecular weight heparin

#### Answer & Comments

Answer: 4- ADP antagonist

Clopidogrel and ticlopidine are adenosine diphosphate (ADP)-receptor antagonists that inhibit ADP-induced fibrinogen binding to platelets, a necessary step in the platelet aggregation process.



[ Q: 1910 ] MRCPass - 2010 May

A 23-year-old woman comes for review.

She was diagnosed with asthma two years ago and is currently using a salbutamol inhaler 100mcg PRN combined with beclometasone dipropionate inhaler 400mcg twice a day. She continues to get frequent episodes of wheeziness and shortness of breath with low peak flow readings. She has a good inhaler technique.

*What is the most appropriate next step in management?*

- 1- Switch steroid to fluticasone propionate
- 2- Increase beclometasone dipropionate to 800mcg bd
- 3- Trial of montelukast
- 4- Add salmeterol
- 5- Add tiotropium

#### Answer & Comments

Answer: 4- Add salmeterol

The management of stable asthma is now well established with a step-wise approach:

Step 1:- Inhaled short-acting B2 agonist as required

Step 2:- Add inhaled steroid at 200-800 mcg/day\*

Step 3:- Add inhaled long-acting B2 agonist (LABA), such as salmeterol

If control still inadequate, institute trial of other therapies, leukotriene receptor antagonist or slow release theophylline



[ Q: 1911 ] MRCPass - 2010 May

A 43 year old man presents to the hospital with shortness of breath and chest pain.

He is a non smoker and has no previous medical history of respiratory problems. His BP was 110/80 & pulse was 80/min. CXR shows a large pneumothorax and the patient had 1.5 litres of air aspirated from the chest. A repeat CXR shows, a maximum of 1.5 cm diameter rim of air from the chest wall and the patient remains short of breath.

*Which is the most appropriate step?*

- 1- Chest drain
- 2- Oxygen therapy
- 3- Observation and follow up
- 4- Repeat needle aspiration
- 5- VATs procedure

#### Answer & Comments

Answer: 4- Repeat needle aspiration

This patient has a symptomatic primary pneumothorax which has been aspirated and in the question the actual volume aspirated in the first instance was also given.

A repeat aspiration is recommended if the patient is still symptomatic after the first aspiration (for a primary pneumothorax) and < 2.5 l of air was aspirated in the first attempt as in this case.

See pg 44 of the BTS guideline

<http://www.brit-thoracic.org.uk/clinical-information/pneumothorax/pneumothorax-guideline.aspx>



[ Q: 1912 ] MRCPass - 2010 May

A 25-year-old man presented with bi-temporal hemianopia. He mentioned that his shoe sizes were above that of his friends since childhood and he often had watery episodes.

*Which one of the following tests is likely to confirm the diagnosis of acromegaly?*

- 1- Random growth hormone
- 2- IGF-1
- 3- Glucose tolerance test with growth hormone suppression
- 4- MRI pituitary Synacthen test
- 5- Synacthen test

#### Answer & Comments

**Answer:** 3- Glucose tolerance test with growth hormone suppression

In Acromegaly, there is excess Growth hormone (GH) which is difficult to suppress.

Because GH secretion is inhibited by glucose, measurement of glucose non-suppressibility is useful. In the glucose tolerance test, baseline GH levels are obtained prior to ingestion of 100 g of oral glucose, and additional GH measurements are made at 30, 60, 90, and 120 minutes following the oral glucose load. Patients with active acromegaly are unable to suppress GH concentration below 2 ng/mL.

Random GH measurements are often not diagnostic because of the episodic secretion of GH, but IGF-I has a long half-life, and is useful as a screen for Acromegaly. MRI may reveal a pituitary tumour but it would not be specific for Acromegaly.



[ Q: 1913 ] MRCPass - 2010 May

A 69-year-old woman has lung carcinoma and recently underwent chemotherapy. She presented with shortness of breath and pleuritic chest pain.

*Which one of the following signs suggests a significant pericardial effusion?*

- 1- Systolic murmur
- 2- Pericardial rub
- 3- Rapid y descent of JVP
- 4- Rise of JVP with inspiration
- 5- rise in blood pressure with inspiration

#### Answer & Comments

**Answer:** 4- Rise of JVP with inspiration

The question asks for which signs are present in cardiac tamponade due to a large pericardial effusion.

The main signs are Kussmaul's sign (increase in JVP with inspiration) and Pulsus paradoxus (the inspiratory fall of aortic systolic pressure greater than 10 mm Hg).



[ Q: 1914 ] MRCPass - 2010 May

A 60 year old lady is being assessed for treatment of hypertension. She has a high blood pressure despite being on bendroflumethiazide. She has recently discontinued medications due to ankle oedema, gum bleeding and generalised lethargy.

*What medication should she be given?*

- 1- Atenolol
- 2- Perindopril
- 3- Amlodipine
- 4- Verapamil
- 5- Frusemide

#### Answer & Comments

**Answer:** 2- Perindopril

Beta blockers may worsen lethargy and calcium channel blockers can cause ankle oedema and gum bleeding.



A thiazide diuretic has already been started, hence frusemide is not appropriate, hence an ACE inhibitor such as perindopril is the best option.



[ Q: 1915 ] MRCPass - 2010 May

A 20 year old cocaine abuser presents with chest pain. On admission, he has a blood pressure of 180 / 95 mmHg and is agitated.

*What serious complication is he most likely to develop?*

- 1- Hyponatraemia
- 2- Hypomagnesaemia
- 3- Hyperkalemia
- 4- Hyperthermia
- 5- Hypothermia

#### Answer & Comments

Answer: 4- Hyperthermia

Cocaine is a strong stimulant.

In significant cocaine overdoses, the main effects are Acute coronary syndrome (coronary vasospasm), Agitation and delirium, Seizures and severe Hyperthermia.



[ Q: 1916 ] MRCPass - 2010 May

*Which of the following types of infections is most commonly transmitted through platelet infusion?*

- 1- HIV
- 2- Malaria
- 3- Hepatitis B
- 4- Staphylococcal
- 5- Treponema

#### Answer & Comments

Answer: 4- Staphylococcal

The most common acute risk is bacterial line related infections such as staphylococcal, which has been underreported.

The important long-term risks of transmitting viral infection from the donor are well recognised and have been substantially reduced by screening of HIV and Hepatitis B + C in developed countries.



[ Q: 1917 ] MRCPass - 2010 May

A 35 year old woman presents with a history of intermittent light-headedness.

Clinical examination and 12-lead ECG were normal.

*Which of the following, if present on a 24 hour Holter ECG tracing, would be the most clinically important?*

- 1- Atrial premature beats
- 2- Profound sleep-associated bradycardia
- 3- Supraventricular tachycardia
- 4- Transient Mobitz type 1 atrioventricular block
- 5- Ventricular premature beats

#### Answer & Comments

Answer: 3- Supraventricular tachycardia

The most significant arrhythmia here is supraventricular tachycardia and consideration should be given to a trial of medication such as beta blocker.

Both atrial and ventricular premature beats, sleep associated bradycardia and transient second degree (mobitz) heart block do not need intervention.



[ Q: 1918 ] MRCPass - 2010 May

A 48-year-old white male who is HIV positive presented to the emergency department with a 10-day history of jaundice and a 4-day history of right upper quadrant and midepigastria abdominal pain. He gives a

history of recent unprotected sexual intercourse. His most recent CD4+ cell count was 520 / $\mu$ L with a viral load of less than 400 HIV RNA copies/mL.

On physical examination, his abdomen was moderately distended, with marked tenderness in the right upper quadrant, and both his liver and spleen were 5 cm below the costal margin. Laboratory assessment showed:

Bilirubin 32 (1-22)  $\mu$ mol/l, serum alkaline phosphatase, 138 IU/L (30 to 115 IU/L); serum aspartate and alanine transaminases, 75 and 88 IU/L, (normal, 5 to 45 IU/L and 5 to 60 IU/L).

*What is the most likely cause of hepatitis in this patient?*

- 1- Cytomegalovirus
- 2- Epstein barr virus
- 3- Hepatitis B virus
- 4- Hepatitis C virus
- 5- Hepatitis E virus

#### Answer & Comments

Answer: 4- Hepatitis C virus

This question asks what the commonest cause of viral co-infection causing hepatitis in HIV patients.

The highest prevalence of viral co-infection among HIV infected patients is hepatitis C.



[ Q: 1919 ] MRCPass - 2010 May

A 25-year-old man presented to the emergency department with fevers. He drinks 4 units of alcohol per day and admitted to regular intravenous drug abuse. On physical examination, the patient had a temperature of 38°C, was tachypnoeic and tachycardic. Blood pressure was 100/85 mmHg. He had a soft systolic murmur heard throughout the precordium.

*What is the most likely infective organism?*

- 1- Staph viridans

- 2- Staph epidermidis
- 3- Staph aureus
- 4- Pneumocystis carinii
- 5- Streptococcus pyogenes

#### Answer & Comments

Answer: 3- Staph aureus

In this case, due to a history of intravenous drug use, tricuspid valve endocarditis is most likely.

Among intravenous drug users, staph aureus is the most common cause. In patients with native valve endocarditis, staph viridans is the most common.



[ Q: 1920 ] MRCPass - 2010 May

A 42-year-old woman who is known to be HIV positive is admitted to the Emergency Department following a seizure. Her partner reports that she has been having headaches, night sweats and anorexia for the past four weeks. Blood tests and a CT head are arranged:

CD4 80 cells/mm

CT head - Single ring enhancing lesion in the right parietal lobe with surrounding oedema

*What is the most likely diagnosis?*

- 1- CNS lymphoma
- 2- Tuberculosis
- 3- Progressive multifocal leucoencephalopathy
- 4- Brain abscess
- 5- Toxoplasmosis

#### Answer & Comments

Answer: 1- CNS lymphoma

The best options are either lymphoma or toxoplasmosis, but key to differentiating is whether it is single or multiple.

With cerebral lymphoma, a single lesion that enhances in a nodular, homogeneous, or ring-like pattern is observed, typically with surrounding cerebral oedema.

Toxoplasmosis is the most common cause of brain lesions in HIV patients.

The majority of lesions (90%) are However, multiple on presentation, so is less likely in the above scenario.

Tuberculous infection is much more varied radiologically, with meningeal destruction and Granulomas.



[ Q: 1921 ] MRCPass - 2010 May

A 55 year old lady is being reviewed in the diabetes clinic. She has type 2 diabetes which is poorly controlled and a history of CCF with moderately impaired left ventricular function. Her BMI is 35. She is currently on gliclazide 160mg bd, a long acting glargine insulin and short acting actrapid insulin with meals, frusemide, amlodipine and bendrofluazide. Her HbA1c value is 12 and she has frequently high BMS recorded. Her latest U&E results are urea 10 mmol/l, creatinine 190 µmol/l.

*What is the best medication to add to control her blood sugars?*

- 1- Rosiglitazone
- 2- Metformin
- 3- Exanetide
- 4- Glimepiride
- 5- Glucagon

#### Answer & Comments

Answer: 3- Exanetide

The newer incretin (GLP) analogues are now included in the guidelines by NICE CG 66 for patients who have not responded to insulin and Thiazolidinediones.

In this patient, rosiglitazone is contraindicated due to heart failure and metformin is relatively contraindicated due to renal impairment. The BMI is high and as a second line agent after sulphonylurea and insulin, exanetide should be considered.



[ Q: 1922 ] MRCPass - 2010 May

A 64 year old man presents with an episode of amnesia for the second time. 2 days ago he had an episode of confusion, according to his wife. He was, However, able to have a normal conversation despite having been found wandering. After 2 hours, he abruptly returned to normal and could not remember what happened.

*What is the most likely diagnosis?*

- 1- Alcoholic encephalopathy
- 2- subarachnoid haemorrhage
- 3- Complex partial seizure
- 4- Transient ischaemic attack
- 5- Transient global amnesia

#### Answer & Comments

Answer: 5- Transient global amnesia

Transient global amnesia (TGA) is a temporary and isolated disorder of memory which may last several hours.

Precipitating factors include sexual intercourse and heavy physical exercise, particularly swimming in cold water.



[ Q: 1923 ] MRCPass - 2010 May

A 65-year-old comes to the clinic for a review of his symptoms.

He has been followed up for aortic stenosis for the last 10 years. Over the past three months he has been complaining of fatigue and has lost 8 kg in weight. A full blood count was requested:

Hb9.2 g/dl

MCV 65 fl

Plt 360 x 10<sup>9</sup>/l

WBC 5.0 x10<sup>9</sup>/l

Blood film Hypochromic, microcytic picture

An upper GI endoscopy and duodenal biopsy was normal.

*What is the most appropriate next investigation?*

- 1- Transthoracic echocardiogram
- 2- Bone marrow biopsy
- 3- Colonoscopy
- 4- Faecal occult blood
- 5- Mesenteric angiography

#### Answer & Comments

Answer: 3- Colonoscopy

The patient may have angiodysplasia, which is associated with aortic valve disease.

There is evidence of iron deficiency anaemia. Although the OGD is normal, a colonoscopy should be considered as it can investigate higher for sources of bleeding.



[ Q: 1924 ] MRCPass - 2010 May

A 50 year old man with worsening angina was referred for an exercise test. The Bruce protocol exercise test was positive with recordings showing 2-3 mm ST depression in the anterior leads.

*Which one of the following drugs is likely to improve prognosis?*

- 1- Isosorbide mononitrate
- 2- Diltiazem
- 3- Aspirin
- 4- Nicorandil
- 5- Ivabradine

#### Answer & Comments

Answer: 3- Aspirin

Several large trials have demonstrated that aspirin improves prognosis in unstable angina and reduces the risks of cardiovascular events such as myocardial infarction.

The other drugs are all good antianginal drugs for symptomatic management.



[ Q: 1925 ] MRCPass - 2010 May

A 40 year old man has palpitations and ECG shows atrial fibrillation. This resolves spontaneously. The next day, the ECG was normal. Echocardiography reveal normal cardiac anatomy. The patient describes weekly episodes of palpitations.

*Which of the following should be started for maintenance of sinus rhythm?*

- 1- Digoxin
- 2- Flecainide
- 3- Amlodipine
- 4- Bretylium
- 5- Ramipril

#### Answer & Comments

Answer: 2- Flecainide

Flecainide is a class Ic antiarrhythmic (sodium channel blocker) which is useful for paroxysmal AF.

Other helpful options are beta blockers (sotalol) and amiodarone.



[ Q: 1926 ] MRCPass - 2010 May

A 60 year-old man is admitted with pain, weakness and numbness in his right foot. He has had long standing lower back pain but the symptoms of weakness and numbness only started two weeks ago.

On examination, there was weakness of all movements at the right ankle, an absent right

ankle jerk and sensory impairment on lateral aspect of the sole of the right foot. There was plantar flexion with the babinski reflex.

*Where is the likely site of the lesion?*

- 1- Femoral nerve
- 2- Lumbosacral plexus
- 3- Obturator nerve
- 4- Sciatic nerve
- 5- S1 spinal root

#### Answer & Comments

Answer: 4- Sciatic nerve

Sciatic nerve palsy causes global weakness of ankle due involvement of both of its branches: tibial nerve (plantar flexion and inversion) and common peroneal nerve (dorsiflexion and eversion).

The right ankle jerk is also absent due to tibial nerve involvement.



[ Q: 1927 ] MRCPass - 2010 May

A 45 year old patient who takes bendroflumethiazide is noted to have a potassium of 3.1 mmol/l.

*What is the main mechanism causing hypokalaemia in patients taking bendroflumethiazide?*

- 1- Opening of potassium channels in the proximal convoluted tubule
- 2- Decreased sodium reaching the distal convoluted tubule
- 3- Decreased flow rate in the nephron resulting in a decreased potassium gradient
- 4- Increased sodium reaching the collecting ducts
- 5- Inhibition of renin-angiotensin-aldosterone system

#### Answer & Comments

Answer: 4- Increased sodium reaching the collecting ducts

The two mechanisms of hypokalaemia cause by the thiazide (Bendroflumethiazide) are increased sodium reaching the collecting ducts and activation of the renin-angiotensin-aldosterone system



[ Q: 1928 ] MRCPass - 2010 May

A 75 year old woman presented with a non healing ulcer on her right foot and was admitted to hospital.

She has a temperature of 37.9 C. Blood cultures on day 1 grew MRSA.

*What antibiotics would you consider in addition to vancomycin?*

- 1- Co amoxiclav
- 2- Metronidazole
- 3- Rifampicin
- 4- Ciprofloxacin
- 5- Linezolid

#### Answer & Comments

Answer: 3- Rifampicin

Rifampicin and vancomycin are a good combination for initial treatment of MRSA.

If this does not respond linezolid is a good alternative.



[ Q: 1929 ] MRCPass - 2010 May

A 43 year old woman was admitted to hospital with a several month history of diarrhoea, malaise and weight loss. She was in good health prior to the development of these symptoms. On examination, she had mild jaundice and looked thin. She had a distended abdomen with shifting dullness to percussion. Her blood tests show :

Hb 10.5 g/dl

MCV 82 fl  
 WCC  $8 \times 10^9/l$   
 platelets  $220 \times 10^9/l$ ,  
 sodium 125 mmol/l  
 potassium 4.1 mmol/l  
 urea 11 mmol/l  
 creatinine 160  $\mu\text{mol/l}$ ,  
 ALT 95 (5-35) U/l  
 AST 115 (1-31) U/l  
 ALP 220(20-120) U/l  
 Bilirubin 30 (1-22)  $\mu\text{mol/l}$   
 Albumin 28 (37-49) g/l  
 Carcinoembryonic antigen (CEA) 3.8 <2.5 ng/ml  
 Alpha-Fetoprotein (AFP) 55 < 44 ?g/L  
 CA125 - 38 (<35) U/ml  
 CA 19-9 - 250 (< 40) U/ml  
 CA 15-3 - 32 (< 29) U/mL  
 Prostate-Specific Antigen (PSA) 2 (< 4) ng/ml

*Which one of the following is the likely primary tumour?*

- 1- Pancreas
- 2- Colorectal
- 3- Ovarian
- 4- Liver
- 5- Prostate

#### Answer & Comments

Answer: 1- Pancreas

The tumour markers are not specific to one tumour but in this case the Ca 19.9 is highest, and it is most strongly associated with pancreatic cancer.



[ Q: 1930 ] MRCPass - 2010 May

A 45 year old man is known to have HIV.

He develops multiple fleshy, red nodules on the trunk and on the buttocks. The crops of lesions are flat topped and papular. These were treated and subsequently healed with scarring, but the patient noticed further lesions developing after a few months.

*Which one of the following is most likely?*

- 1- Molluscum contagiosum
- 2- Kaposi's sarcoma
- 3- Human papillomavirus infection
- 4- Herpes zoster infection
- 5- herpes simplex infection

#### Answer & Comments

Answer: 2- Kaposi's sarcoma

Kaposi's sarcoma (KS) is a tumor caused by Human herpesvirus 8 (HHV8) and frequently found in patients with HIV infection.

Kaposi's sarcoma lesions may appear like bruises but are papular. With time, they darken. Scarring is common following treatment with immunosuppressive drugs.

Molluscum contagiosum is a viral skin disease characterised by firm, round, translucent, umbilicated papules containing caseous matter and peculiar capsulated bodies. It is caused by a DNA virus of pox family. It can appear with crops and can be treated with cryotherapy. It tends to be self limiting and does not scar.



[ Q: 1931 ] MRCPass - 2010 May

A 62 year old man presents with a cough and chest x ray confirms that he has a pneumonia.

*Which one of the following is a bad prognostic sign?*

- 1- Wbc  $>30 \times 10^9/l$
- 2- Urea of 9 mmol/l
- 3- Temperature of 39 °C



4- Age of 62

5- Consolidation on the CXR

#### Answer & Comments

Answer: 2- Urea of 9 mmol/l

The CURB - 65 score for assessment of severity of pneumonia is tested here.

The criteria are:

- Confusion of new onset (defined as an AMT of 8 or less)
- Urea greater than 7 mmol/l (Blood Urea Nitrogen > 19)
- Respiratory rate of 30 breaths per minute or greater
- Blood pressure systolic < 90 mmHg or diastolic < 60 mmHg
- age 65 or older



[ Q: 1932 ] MRCPass - 2010 May

A 30 year old lady is seeking genetic advice. She has haemochromatosis and her husband does not have any knowledge of being affected.

*What is the chance of a child carrying the gene?*

- 1- 0%
- 2- 1 in 50
- 3- 1 in 100
- 4- 1 in 400
- 5- 100%

#### Answer & Comments

Answer: 5- 100%

The inheritance of the HFE gene in haemochromatosis is autosomal recessive.

The HFE gene is located on short arm of chromosome 6 at location. Approximately one in ten people are carriers of the mutated gene. It is thought that the HFE protein functions to regulate iron absorption by regulating the interaction of the transferrin receptor with transferrin.

In this case, as the mother is homozygous for the gene as it is autosomal recessive and she has the disease. This means that all of her offspring will be carriers of the gene.



[ Q: 1933 ] MRCPass - 2010 May

A 20 year old woman has been referred with polyuria and polydipsia. She mentions that she has had the symptoms for 2 months. Upon investigation the following results were found.

sodium 148 mmol/l

potassium 4.5 mmol/l

urea 4 mmol/l

creatinine 78 µmol/l

Glucose: 5.5 mmol/l

Plasma Osmolality 308 (280-300) mmol/kg water

Urine Osmolality . 90 (50-1200) mmol/kg

*What is the diagnosis?*

- 1- Addison's disease
- 2- Diabetes mellitus
- 3- Psychogenic polydipsia
- 4- Diabetes insipidus
- 5- SIADH

#### Answer & Comments

Answer: 4- Diabetes insipidus

Diabetes insipidus usually presents with thirst and polyuria.

This is due to a lack of anti diuretic hormone (ADH) action. Despite drinking a lot, water loss leads to hypernatraemia and high plasma

osmolality. The inappropriately low urine osmolality is due to an inability to reabsorb water (or concentrate urine). A lack of ADH production is termed cranial diabetes insipidus (e.g. pituitary tumour) and a lack of response to ADH is termed nephrogenic diabetes insipidus (e.g. action of drugs on the kidney).

In contrast, a patient with psychogenic polydipsia would not have high plasma osmolalities and hypernatraemia (rather would be hyponatraemic). A patient with SIADH would not typically give a history of polydipsia and polyuria.



[ Q: 1934 ] MRCPass - 2010 May

A 30 year old lady was admitted to hospital by a concerned neighbour. She complains of seeing spider's crawling all over her body and she was disoriented. On examination, she was tremulous and looked very restless. She had a wide based, unsteady gait.

*What is the diagnosis?*

- 1- Hyponatraemic encephalopathy
- 2- Schizophrenia
- 3- Benzodiazepine withdrawal
- 4- Delirium Tremens
- 5- Wernicke's encephalopathy

#### Answer & Comments

Answer: 4- Delirium Tremens

This patient's history of disorientation, agitation and hallucination fits delirium tremens best.

If she was significantly confused rather than having hallucinations, then alcoholic (Wernicke's) encephalopathy should be considered.



[ Q: 1935 ] MRCPass - 2010 May

A 63 year old man presents with severe central crushing chest pain.

*Which one of the following features is most likely to be associated aortic dissection?*

- 1- Jaw pain
- 2- Lower limb neurological deficit
- 3- Severe hypertension
- 4- Gas under the diaphragm on the chest x ray
- 5- Anaemia

#### Answer & Comments

Answer: 3- Severe hypertension

Severe hypertension, aortic aneurysm and connective tissue disorders (e.g. Marfan syndrome) are predisposing factors to aortic dissection. The nature of the pain can vary significantly - epigastric pain, tearing pains, back pains and even dull pains can occur.



[ Q: 1936 ] MRCPass - 2010 May

A 18 year old patient had a continuous murmur and was suspected to have patent ductus arteriosus.

*What is the nature of the pulse likely to be?*

- 1- Jerky
- 2- Bisferiens
- 3- Dicrotic
- 4- Slow rising
- 5- Collapsing

#### Answer & Comments

Answer: 5- Collapsing

With a patent ductus arteriosus, the pulse may be collapsing in nature if there is a large shunt.

Other signs include a continuous or machinery murmur is best heard at the upper left sternal border or left infraclavicular area, and there

may be signs of pulmonary hypertension (loud second heart sound).



[ Q: 1937 ] MRCPass - 2010 May

A 25-year-old man presented with an enlarged inguinal lymph node with night sweats, and the most likely clinical diagnosis is Hodgkin's lymphoma. A biopsy has been taken.

*Which of the following findings on histology confers the best prognosis in Hodgkin's lymphoma?*

- 1- Lymphocyte depleted
- 2- Lymphocyte predominant
- 3- Mixed cellularity
- 4- Nodular sclerosing
- 5- Non-Hodgkin's changes

#### Answer & Comments

Answer: 2- Lymphocyte predominant

Hodgkin's lymphoma is a malignant proliferation of the lymphoid system and is characterised by the presence of Reed-Sternberg cells on histological examination.

In order of good prognosis to worst, the histology types are - lymphocytic predominant > nodular sclerosis > mixed cellularity > lymphocytic depletion.

The best prognosis is with lymphocyte predominant histology and lymphocyte depleted has the worst.



[ Q: 1938 ] MRCPass - 2010 May

A 55-year-old man has drunk six units of alcohol a day for most of his adult life.

He was found wandering the street and appears confused. He was brought into hospital for assessment. A friend gives a history that he has worsening symptoms of difficulty walking, headaches and urinary incontinence for the past ten months. On

examination, he walks with a wide based gait and has an MMSE score of 18 / 30.

*Of the following which is the most likely diagnosis?*

- 1- Meningovascular syphilis
- 2- Normal pressure hydrocephalus
- 3- Syringomyelia
- 4- Wernicke-Korsakoff syndrome
- 5- Alzheimer's disease

#### Answer & Comments

Answer: 2- Normal pressure hydrocephalus

Normal pressure hydrocephalus (NPH) is a clinical symptom complex characterized by a triad of symptoms which are: abnormal gait, urinary incontinence, and dementia.

Is a form of communicating hydrocephalus in which the intracranial pressure, as measured by lumbar puncture, is normal or intermittently raised.



[ Q: 1939 ] MRCPass - 2010 May

A 45 year old patient presents with proximal muscle weakness, particularly in the lower limbs. She has a heliotropic rash around the eyes and also has Gottron's papules.

*Which one of the following antibodies is most strongly associated?*

- 1- Sm
- 2- Ro
- 3- Jo-1
- 4- SCL-70
- 5- DsDNA

#### Answer & Comments

Answer: 3- Jo-1

The diagnosis is dermatomyositis.

Anti Jo-1 antibody is associated with acute onset myositis, particularly dermatomyositis.

The limb girdle or proximal muscles are most severely affected in both polymyositis and dermatomyositis.



[ Q: 1940 ] MRCPass - 2010 May

A 46 year old man is known to have ulcerative colitis which was diagnosed 10 years ago. Over the last two months he has right upper quadrant discomfort and noticed to have jaundice. He was referred to the gastroenterology outpatients for assessment.

Investigations performed showed these results: Ultrasound showed a dilated intra and extrahepatic ducts with beaded appearances.

Blood tests results:

ALT 120 (5-35) U/l

AST 90 (1-31) U/l

ALP 850 (20-120) U/l

GGT 250 (4-35) U/l

Bilirubin 75 (1-22)  $\mu\text{mol/l}$

Albumin 38 (37-49) g/l

*What is the likely diagnosis?*

- 1- Focal nodular hyperplasia
- 2- Primary sclerosing cholangitis
- 3- Hemangioma
- 4- Cholecystitis
- 5- Hepatocellular carcinoma

#### Answer & Comments

Answer: 2- Primary sclerosing cholangitis

The cholestatic picture along with inflammatory lesion seen on the ultrasound hints towards either Sclerosing cholangitis or associated with ulcerative colitis.

Narrowing of the bile duct lumen usually occurs throughout the biliary tree. Less commonly, changes are confined to the intra-hepatic or extra-hepatic ducts.

Primary sclerosing cholangitis is a disease of unknown aetiology characterised by chronic inflammation and fibrosis of the bile duct. It is associated with cholangiocarcinoma, a cancer of the biliary tree, and the lifetime risk for PSC sufferers is 10-15%. As many as 5% of patients with ulcerative colitis may progress to develop primary sclerosing cholangitis and approximately 70% of people with primary sclerosing cholangitis have ulcerative colitis.



[ Q: 1941 ] MRCPass - 2010 May

A 28 year old lady had amenorrhoea over the last 2 months after discontinuing use of an oral contraceptive pill.

She has recently been doing vigorous exercise.

*Which one of the following is most likely?*

- 1- Premature ovarian failure
- 2- Panhypopituitarism
- 3- Adrenal tumour
- 4- Polycystic ovary disease
- 5- Amenorrhoea due to stopping OCP

#### Answer & Comments

Answer: 5- Amenorrhoea due to stopping OCP

Post-pill amenorrhoea occurs in some women after stopping the combined oral contraceptive pill.

This usually settles spontaneously three months after discontinuing the pill. Excessive exercise is another cause of amenorrhoea.



[ Q: 1942 ] MRCPass - 2010 May

*Which one of the following is broken down to Glucose and Galactose?*

- 1- Maltose
- 2- Sucrose
- 3- Fructose
- 4- Mannose
- 5- Lactose

## Answer &amp; Comments

**Answer:** 5- Lactose

Lactose is broken down into glucose and galactose by an enzyme called lactase.



[ Q: 1943 ] MRCPass - 2010 May

A study assessed a statin tablet compared to placebo for stroke prevention over 2 years.

There were 10% of patients developing stroke in the group taking a tablet and 20% in the carotid endarterectomy group developing a stroke.

*What is the number needed to treat over 1 year to prevent 1 death?*

- 1- 1
- 2- 10
- 3- 20
- 4- 100
- 5- 1000

## Answer &amp; Comments

**Answer:** 2- 10

NNT is defined as number needed to treat to prevent 1 death.

The way to work this out is 1 divided by absolute risk reduction (Experimental event rate - control event rate). Hence  $1 / (ARR)$  is  $1 / 10\%$  which is 10.



[ Q: 1944 ] MRCPass - 2010 May

*Which role does the BRCA gene play in the DNA of tumour cells?*

- 1- Telomerase inhibitor
- 2- Homeobox
- 3- Tumour suppressor
- 4- Tyrosine kinase
- 5- Cyclic AMP second messenger

## Answer &amp; Comments

**Answer:** 3- Tumour suppressor

The BRCA genes belongs to a class of genes known as tumor suppressor genes.

BRCA1 is expressed in the cells of breast and other tissue, where it helps repair damaged DNA, and destroy the cell when DNA can't be repaired. If BRCA1 itself is damaged, the damaged DNA can let the cell duplicate without control, and turn into a cancer



[ Q: 1945 ] MRCPass - 2010 May

A 17 year old female was admitted with acute severe asthma.

*Which feature would make you think it is life threatening?*

- 1- PH of 7.40
- 2- PaO<sub>2</sub> of 8.4
- 3- PaCO<sub>2</sub> of 5.5
- 4- RR 30
- 5- PEFR < 35% of predicted

## Answer &amp; Comments

**Answer:** 5- PEFR < 35% of predicted

The results show a normal pH, low pO<sub>2</sub>, normal CO<sub>2</sub> and high respiratory rate.

The most important predictors will be significantly low Peak flow rate as in this case, or Type II respiratory failure (high CO<sub>2</sub>) with respiratory acidosis.



[ Q: 1946 ] MRCPass - 2010 May

A 65 year old man is admitted for investigation of jaundice and anorexia for several weeks. 6 weeks ago, he had completed a course of medication which had been prescribed by his GP.

Investigations reveal:

Albumin 40 g/L (37-49)

Bilirubin 260 umol/L (1-22)

AST 80 iu/L (5-35)

Alkaline Phosphatase 430 iu/l (50-110)

Abdominal ultrasound reveals gallstones but no evidence of cholecystitis.

*Which drug is most likely to cause the presentation?*

- 1- Allopurinol
- 2- Augmentin
- 3- Amiodarone
- 4- Pravastatin
- 5- Ibuprofen

#### Answer & Comments

Answer: 2- Augmentin

The blood results are consistent with cholestatic jaundice as there is significantly elevated bilirubin and ALP.

Co-amoxiclav (augmentin) is a well known cause of this.

Other drugs includes gold, nitrofurantoin, anabolic steroids, chlorpromazine, prochlorperazine, cimetidine, erythromycin and estrogen.



[ Q: 1947 ] MRCPass - 2010 May

A 70 year old man is admitted to casualty with severe agitation, tremors and ataxia. He is known to be on an antidepressant previously. Currently he smokes 40 cigarettes a day and drinks 20 units of alcohol per day.

*What drug should be given for sedation?*

- 1- Haloperidol
- 2- Diazepam
- 3- Chlorpromazine
- 4- Chlordiazepoxide
- 5- Propofol

#### Answer & Comments

Answer: 4- Chlordiazepoxide

Chlordiazepoxide is a benzodiazepine used to control symptoms of alcohol withdrawal.



[ Q: 1948 ] MRCPass - 2010 May

A 19 year old female med student performs valsalva's manoeuvre for a class demonstration.

*During the manoeuvre, what is the initial physiological mechanism to occur?*

- 1- Reduced stroke volume
- 2- Fall in cardiac output
- 3- Decrease in heart rate
- 4- Increase in systolic arterial blood pressure
- 5- Reduced venous return

#### Answer & Comments

Answer: 4- Increase in systolic arterial blood pressure

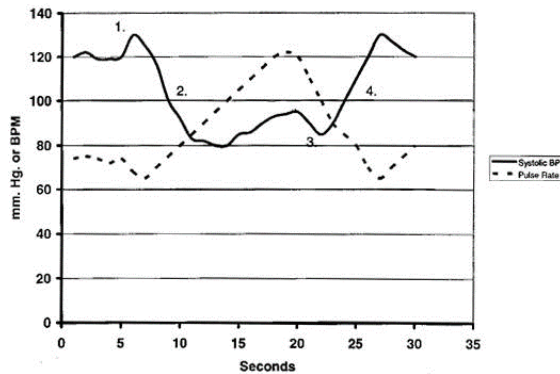
A valsalva manoeuvre is forced expiration against a held breath.

There is an initial blood pressure rise (increase in stroke volume and cardiac output) as the pressure in the chest forces blood

Following this, the increased pressure in the chest reduces venous return and this also leads to cardiac output to reduce, the heart rate also decreases.

When the pressure is released (patient exhales) there is then a slight blood pressure drop. The easiest way to appreciate this is the graph below.





[ Q: 1949 ] MRCPass - 2010 May

Which of the following is most likely to be responsible for Ventricular tachycardia?

- 1- Hyponatremia
- 2- Hypokalaemia
- 3- Hypomagnesaemia
- 4- Hypophosphataemia
- 5- Hypothermia

#### Answer & Comments

**Answer:** 3- Hypomagnesaemia

Many of the options can cause VT / VF but as an isolated cause the most likely is hypomagnesaemia. As hypomagnesaemia is a common cause of VT, a stat dose magnesium sulphate is often given as initial treatment.



[ Q: 1950 ] MRCPass - 2010 May

A patient presents with an inability to abduct his right arm and has loss of sensation over the right shoulder area.

Which dermatome is affected?

- 1- C3
- 2- C5
- 3- C7
- 4- C8
- 5- T1

#### Answer & Comments

**Answer:** 2- C5

The deltoid muscle is implicated here, as the action is shoulder abduction and there is loss of sensation over the C5 dermatome.

It is innervated by the axillary nerve (C5 and C6).



[ Q: 1951 ] MRCPass - 2010 May

A 53-year-old woman presents with periods of sweats and tremors which are relieved by eating. She has gained approximately 6 kg in weight in the last 2 years. Her BM is 4.5. Blood tests are: Hb 13 g/dl, MCV 78 fl, WCC  $7 \times 10^9/l$ , platelets  $200 \times 10^9/l$ , sodium 135 mmol/l, potassium 4.7 mmol/l, urea 5 mmol/l, creatinine 100 mmol/l, TSH - 3.3 (0.3-4) mU/l, free T4 -20 (10-24) pmol/l.

What is the most appropriate investigation?

- 1- 72 hour fast
- 2- CT scan of pancreas
- 3- MRI of the brain
- 4- Insulin C-peptide concentration
- 5- Oral glucose tolerance test

#### Answer & Comments

**Answer:** 1- 72 hour fast

This patient has symptoms suggestive of hypoglycaemia which are relieved by carbohydrate.

The likely cause is an insulinoma which is an insulin secreting pancreatic tumour.

The best way of confirming the diagnosis is with a 72 hour fast. During the fast, the patient with an insulinoma may get episodes of hypoglycaemia with measured inappropriately high insulin C peptide (endogenous insulin).

Measurement of C-peptide is useful in excluding factitious hypoglycaemia from self injection of insulin. Insulin preparations do not contain C-peptide.



[ Q: 1952 ] MRCPass - 2010 May

A 50 year old lady is assessed for longstanding abdominal symptoms. She describes chronic intermittent abdominal pains which were moderate in intensity, gripping in nature, localized in the middle of the abdomen. She also had increased frequency of stools up to 15 times a day. The stool was brownish yellow in color, sticky and oily, difficult to flush but devoid of blood or mucus. Typically the abdominal pain was relieved after passing the stool.

*What is the best investigation to confirm the diagnosis?*

- 1- Duodenal biopsy
- 2- Liver biopsy
- 3- Tumour markers
- 4- Faecal fat
- 5- Faecal elastase

#### Answer & Comments

Answer: 5- Faecal elastase

This patient has steatorrhoea and a diagnosis of chronic pancreatitis.

Assays of fecal chymotrypsin and human pancreatic elastase 1 are useful in confirming advanced chronic pancreatitis with exocrine insufficiency. To check for pancreatic exocrine dysfunction, the most sensitive and specific test is the measurement of fecal elastase, which can be done with a single stool sample. Faecal fat analysis can also be useful but less convenient as it requires measurement of fecal fat excretion over 24hr on a 100g fat diet.

Other useful tests are CT Scan demonstrating calcification or complications of chronic

pancreatitis such as pseudocysts) and ERCP (showing chronic ductal changes) with some advanced centres able to offer measurement of pancreatic enzyme production (protease, amylase, lipase).



[ Q: 1953 ] MRCPass - 2010 May

A 50 year old man has presented with assessment of shortness of breath and wheezing. He works as a spray paint worker and gives a history of feeling more breathless during work. The symptoms improve during the weekend. The GP refers her to the respiratory clinic for assessment.

*What investigation is most appropriate to diagnose occupational asthma?*

- 1- Measure peak flows over 2 weeks
- 2- Serial peak flow measurements at home and work
- 3- Skin prick tests to isocyanates
- 4- Lung function test
- 5- IgE levels

#### Answer & Comments

Answer: 2- Serial peak flow measurements at home and work

Lung function tests and reversibility will help to confirm asthma.

For diagnosis of occupational asthma, serial measurements of peak expiratory flow rate at home and at work: this is often the most appropriate first step.

Measurements should be made every two hours from waking to sleeping for four weeks, keeping treatment constant and documenting times at work. There should be at least 3 consecutive work days and 3 days away from work included in the measurements. (as per Guidelines from the British Occupational Health research on Occupational Asthma).



[ Q: 1954 ] MRCPass - 2010 May

A 46 year old man has been to India for 3 months, and returned 4 months ago. He presents complaining that for 6 months, he has had chronic diarrhoea with no blood. He has been previously well with no gastroenterological problems.

*Which one of the following is the most likely infection?*

- 1- Yersinia
- 2- Giardia
- 3- E coli
- 4- Salmonella
- 5- Campylobacter

#### Answer & Comments

Answer: 2- Giardia

Giardiasis (Giardia lamblia infection) often causes chronic diarrhoea which is non-bloody.

This is prevalent in many countries. Symptoms might last for up to 6 weeks and are those of diarrhoea with some abdominal pains.

Salmonella, shigella and campylobacter often cause bloody diarrhoea.

Yersinia infection is a type of zoonosis (infection from animal reservoir), although it can cause fevers and abdominal symptoms, there is no history in this case to suggest a zoonosis.



[ Q: 1955 ] MRCPass - 2010 May

A 63 year old man who has been diagnosed with a glioma is commenced on chemotherapy. 4 days later, he begins to behave strangely, and is noticed to become increasingly agitated. He also has suicidal ideation.

*Which one of the following is most likely?*

- 1- Vincristine encephalitis
- 2- Hyponatraemia

- 3- Hypoglycaemia
- 4- Steroid induced psychosis
- 5- Depressive psychosis

#### Answer & Comments

Answer: 4- Steroid induced psychosis

The incidence of steroid associated cognitive changes including psychosis are high particularly when high dose steroids (e.g. dexamethaxone) are used prior to or as part of chemotherapy.



[ Q: 1956 ] MRCPass - 2010 May

A 52 year old man has had several previous episodes of knee joint effusions. He presents with a swollen right knee. He was afebrile on admission. The knee was aspirated on admission and serous fluid was extracted.

Microscopy and gram stain of the fluid showed no organisms.

2 days later the patient's knee swelled up again and he returned to hospital. However, he complained of more pain and had a temperature of 38°C. Blood tests revealed a raised white cell count and CRP.

*What should be done?*

- 1- Repeat aspiration
- 2- Arthroscopy with washout
- 3- Intravenous antibiotics
- 4- X ray of the knee
- 5- MRI of knee joint

#### Answer & Comments

Answer: 1- Repeat aspiration

Infection after knee aspiration is very uncommon (0.01% incidence).

However, this patient's history of pyrexia does suggest the possibility, hence repeat aspiration and sending fluid for microscopy

and culture is sensible. If the provisional results suggest infection, or if there are other clinical suggestions of bacteraemia or sepsis then the patient should be treated with antibiotics. Septic arthritis can be treated with arthroscopy and washout, but usually in complicated cases e.g. with prosthesis or if a patient does not respond to medical therapy.



[ Q: 1957 ] MRCPass - 2010 May

A 62 year old man has discomfort in the left ankle for 2 days. Several weeks ago he had been on a course of antibiotics. He presented to the emergency department with mild, nonpitting edema of the left calf and ankle, and pain on plantar flexion. A Doppler study failed to detect a thrombus, and there was no radiologic evidence of a fracture. The patient was diagnosed with a muscle strain and achilles tendon rupture.

*Which drug may have caused this?*

- 1- Ciprofloxacin
- 2- Metronidazole
- 3- Amoxicillin
- 4- Nitrofurantoin
- 5- Gentamicin

#### Answer & Comments

Answer: 1- Ciprofloxacin

Disruptions of tendons in adults, including rupture, have been reported in association with fluoroquinolones (ciprofloxacin).

The Achilles tendon is the site most frequently associated with such adverse outcomes.



[ Q: 1958 ] MRCPass - 2010 May

A patient is about to undergo a splenectomy.

*When should pneumococcal vaccine be given in relation to splenectomy?*

- 1- 1 week before Surgery

- 2- 1 month before Surgery
- 3- Several hours before Surgery
- 4- 1 week after Surgery
- 5- One month after surgery

#### Answer & Comments

Answer: 2- 1 month before Surgery

Pneumovax should be given at least two weeks before splenectomy, hence in this situation a month before is the best answer.



[ Q: 1959 ] MRCPass - 2010 May

*Which ion / channel is primarily responsible for repolarisation phase in the cardiac cycle?*

- 1- Sodium
- 2- Sodium Calcium
- 3- Phosphate
- 4- Magnesium
- 5- Potassium

#### Answer & Comments

Answer: 5- Potassium

Depolarisation and repolarisation refer to neuronal conduction or cardiac electrical activity.

The action potentials produced by depolarization (due to Na<sup>+</sup> ions moving into cell), leads to release of Ca<sup>2+</sup> ions which lead to contraction of cardiac muscle, followed by repolarization (K<sup>+</sup> ions moving into cell).



[ Q: 1960 ] MRCPass - 2010 May

A 47 year old man presented with a history of hemoptysis for two months and he had lost 5 kg of weight.

He gives a past history of tuberculosis 20 years ago which was treated with drugs for 6 months. On physical examination, chest

auscultation revealed decreased air entry on right upper lung field. Chest X ray showed a cavitating lesion with dense shadows in right upper lobe. Investigations show that the sputum culture was negative for acid fast bacilli and IgG antibodies for *A. fumigatus* were positive.

*What is the most likely cause?*

- 1- Bronchogenic carcinoma
- 2- Reactivation of tuberculosis
- 3- Aspergilloma
- 4- Invasive aspergillosis
- 5- Lung abscess

#### Answer & Comments

Answer: 3- Aspergilloma

An aspergilloma is a tangled mass composed of hyphae, fibrin, and inflammatory cells, that lies free in the lung cavity.

Aspergillomata may form in cavities produced by previous lung diseases e.g. tuberculosis, abscesses, or areas of pulmonary infarction. It is usually caused by *A. fumigatus*. The most common symptom of aspergillomas is haemoptysis. Aspergillus precipitin antibody test results (ie, for IgG) are usually positive.



[ Q: 1961 ] MRCPass - 2010 May

*Which one of the following drugs is likely to cause an adverse effect among slow acetylators?*

- 1- Amoxicillin
- 2- Trimethoprim
- 3- Hydralazine
- 4- Minoxidil
- 5- Ramipril

#### Answer & Comments

Answer: 3- Hydralazine

50% of the UK population are slow acetylators, i.e. have a deficiency of the enzyme N acetyltransferase.

Acetylator status is important in determining drug response and drug toxicity, e.g. slow acetylators are more at risk of developing drug induced lupus, the three commonest drugs implicated are hydralazine, isoniazid and procainamide.



[ Q: 1962 ] MRCPass - 2010 May

A 35 year old male patient was admitted into the emergency department complaining of double vision and dizziness. There was no relevant past medical history but he described a coryzal illness 2 weeks ago. On examination, he was short of breath at rest. He had reduced eye movements, in particular abduction in both eyes.

Visual acuity was normal and there were no other cranial nerve deficits. Tone was normal in both upper and lower limbs. Power was reduced in the distal modalities of the arms and legs. He had flaccid reflexes throughout and plantars were downgoing.

*What is the likely diagnosis?*

- 1- Multiple sclerosis
- 2- Bilateral cerebrovascular accidents
- 3- Miller-fisher syndrome
- 4- Transverse myelitis
- 5- TB meningitis

#### Answer & Comments

Answer: 3- Miller-fisher syndrome

Miller Fisher Syndrome is a peripheral neurological condition (variant of acute demyelination or Guillain Barre syndrome), mostly associated with respiratory or digestive infections.

The average time for neurological symptoms to appear after infection is 1-2 weeks. It is considered to be initiated by an autoimmune

process. The typical triad for this syndrome includes ophthalmoplegia, ataxia, and areflexia. As with Guillain Barre syndrome, IV Ig should be considered for treatment and the patient should be monitored closely for deterioration in respiratory function.



[ Q: 1963 ] MRCPass - 2010 May

A 30-year-old woman presents with red, raised, itchy lesions that involve her entire body, including her face.

These lesions come and go at the different parts of the body over the last 2 days.

*What treatment should be given?*

- 1- Dapsone
- 2- Cetirizine
- 3- Prednisolone
- 4- Diprobate
- 5- Fluconazole

#### Answer & Comments

Answer: 2- Cetirizine

The itchy red skin lesions which come and disappear are consistent with urticaria.

The patient should be given an antihistamine such as cetirizine. If the reaction is severe and there are signs of anaphylaxis then steroids should be given in addition.



[ Q: 1964 ] MRCPass - 2010 May

A 60 year old man was found to have a parietal lobe stroke.

*Which one of the following is a sign which may be present?*

- 1- Acalculia
- 2- Homonymous superior quadrantanopia
- 3- Perseveration
- 4- Primitive reflexes
- 5- Wernicke's (receptive) aphasia

#### Answer & Comments

Answer: 1- Acalculia

Lesions of parietal lobe include apraxias, neglect, astereognosis (unable recognise an object by feeling it) visual field defects (typically homonymous inferior quadrantanopia).

They may also cause acalculia (inability perform mental arithmetic). Lesions of temporal lobe cause visual field defects (typically homonymous superior quadrantanopia), Wernicke's (receptive) aphasia, auditory agnosia, memory impairment.



[ Q: 1965 ] MRCPass - 2010 May

A 40-year-old female presented with an erythematous annular patch with central clearing on her left forearm following a tick bite. The patient mentioned she had recent onset of intermittent joint pains and asymmetry of her face. On examination, she was pyrexial and had bilateral 7th cranial nerve palsy.

*What is the preferred drug?*

- 1- Prednisolone
- 2- Doxycycline
- 3- Tazocin
- 4- Ceftriaxone
- 5- Gentamicin

#### Answer & Comments

Answer: 4- Ceftriaxone

Lyme Disease (LD) is a multisystem disease affecting the nervous system, skin, joints, and heart.

Erythema migrans, the characteristic dermatologic lesion of LD, is described here. Early localized disease manifests within 3-30 days presenting with erythema migrans,



myalgia, fatigue, headache, fever, lymphadenopathy, and arthralgia.

This usually occurs 30 to 120 days post-infection and is characterized by erythema migrans, fatigue, lymphadenopathy, conjunctivitis, neck pain, cardiac abnormalities, radiculoneuritis, arthritis, and CNS manifestations.

First-line treatment for early disease is doxycycline (100 mg PO twice a day for 14 days) or amoxicillin unless there is neurological involvement.

In this case, there is neurological involvement (neuroborreliosis) hence the preferred treatment would be intravenous ceftriaxone. There remains some controversy about whether doxycycline is just as effective.



[ Q: 1966 ] MRCPass - 2010 May

A 25 year-old woman with a history of depression is brought to the hospital with decreased conscious level and a brief seizure. She had taken an overdose of tricyclic antidepressants 12 hours prior. Her GCS is 12/15, she is tachycardic to 120 bpm and her blood pressure is 96/62 mmHg. She appears flushed and her skin is dry. A blood gas shows:

pH -7.15

pO<sub>2</sub> -13.3 kPa

pCO<sub>2</sub> -3.5 kPa

base excess - negative 8.5

*What should be the management?*

- 1- Gastric Lavage
- 2- Charcoal
- 3- 8.4% bicarbonate infusion
- 4- Naloxone infusion
- 5- Flumazenil infusion

#### Answer & Comments

Answer: 3- 8.4% bicarbonate infusion

Many of the initial signs in tricyclic antidepressant (TCA) overdose are associated to the anticholinergic effects of TCAs such as dry mouth, blurred vision, urinary retention, constipation, dizziness and vomiting.

In a patient who is acidotic who is at risk of cardiac arrhythmias and seizures, serum bicarbonate is recommended.



[ Q: 1967 ] MRCPass - 2010 May

A 30 year old lady ate in a Chinese restaurant before presenting with vomiting and diarrhoea 4 hours later. She continued to have the symptoms on the following day.

*What is the most likely organism which is responsible?*

- 1- Campylobacter
- 2- Escherichia coli
- 3- Bacillus cereus
- 4- Salmonella
- 5- Giardia lamblia

#### Answer & Comments

Answer: 3- Bacillus cereus

B. cereus food poisoning results from the ingestion of preformed enterotoxins, producing predominantly vomiting and diarrhea. It is implicated in food takeaways when rice is re-heated. The vomiting form is most often associated with ingestion of a heat stable toxin from contaminated rice, while the diarrheal form is most often associated with ingestion of a heat labile toxin from contaminated meat or vegetables.



[ Q: 1968 ] MRCPass - 2010 May

A 51-year-old woman with a longstanding medical history of rheumatoid arthritis was admitted to hospital because of nausea and leg swelling. She said that she had worsening ankle swelling over the last two years.

She was previously on gold injections and over the last few months she took regular ibuprofen because of worsening joint pains.

Blood results reveal : sodium 137 mmol/l, potassium 4.5 mmol/l, urea 25 mmol/l, creatinine 290 mmol/l. Urine dipstick

shows protein +++, blood +.

*What is the most likely cause of renal failure?*

- 1- Interstitial nephritis
- 2- Papillary necrosis
- 3- Acute tubular necrosis
- 4- Renal artery stenosis
- 5- Amyloidosis

#### Answer & Comments

Answer: 5- Amyloidosis

The most common renal disorders associated with RA are membranous nephropathy, secondary amyloidosis, a focal, mesangial proliferative glomerulonephritis, rheumatoid vasculitis, and analgesic nephropathy.

NSAID nephropathy may lead to acute tubular necrosis, interstitial nephritis and papillary necrosis. However the history of ankle swelling and proteinuria suggests Amyloidosis. In rheumatoid arthritis secondary (AA) Amyloidosis is associated, and it presents typically with impaired renal function and proteinuria.



[ Q: 1969 ] MRCPass - 2010 May

A 65 year old man was admitted following a collapse with loss of consciousness. A history from a friend revealed that he had a previous myocardial infarction and was currently on several cardiac medications. An ECG showed >2mm ST elevation in Leads V1-3 with no reciprocal changes and there was no evidence of q waves.

*What is the most likely diagnosis?*

- 1- Bundle branch block
- 2- Supraventricular tachycardia
- 3- Ventricular tachycardia
- 4- Cerebral embolism
- 5- Acute Myocardial infarction

#### Answer & Comments

Answer: 3- Ventricular tachycardia

This patient had a syncopal event and also a history of ischaemic heart disease.

The ECG changes are not specific for myocardial infarction, and in this case the clinical history suggests VT is most likely.



[ Q: 1970 ] MRCPass - 2010 May

A 55 year old man presented with severe retrosternal chest pain. He has history of hypertension and diabetes.

His ECG shows anterior wall myocardial infarction with ST elevation in leads V1 to V4. He has been given Aspirin, Clopidogrel and Fondaparinux and is currently awaiting angiography. However, he continues to have chest pains.

*Which other drug should be given?*

- 1- Tissue plasminogen activator
- 2- Streptokinase
- 3- Statin
- 4- ACE - inhibitor
- 5- GIIIIIA inhibitor

#### Answer & Comments

Answer: 5- GIIIIIA inhibitor

This patient is unstable and should be considered for a GIIIIIA inhibitor such as tirofiban whilst awaiting coronary angiography.

Abxiciab, another GIIIIIA inhibitor, is also frequently used prior to angioplasty.

Thrombolysis is not indicated if the patient is going to undergo angiography because the risk of bleeding is high.



[ Q: 1971 ] MRCPass - 2010 May

A 60 year old woman presented with a 10-year history of increasing stiffness and immobility which have led to multiple falls. She had had some difficulty in fine finger movement and urinary incontinence. On examination she had a lying BP of 130 / 80 mmHg and a standing BP of 90 / 60 mmHg. She had a mask like facies, bradykinesia, and resting a tremor in both of her hands. There was also short-term memory loss.

*What is the diagnosis?*

- 1- Lewy body dementia
- 2- Alzheimer's disease
- 3- Parkinson's disease
- 4- Multi system atrophy
- 5- Progressive supranuclear palsy

#### Answer & Comments

Answer: 4- Multi system atrophy

Multi system atrophy (Shy drager syndrome) consists of a cluster of several features:

Parkinsonism (increased tone, bradykinesia, resting tremor)

Autonomic dysfunction (postural hypotension, urinary incontinence, constipation)

Ataxia (leading to falls)

Unlike Parkinson's disease, L-dopa is not effective and treatment is mainly supportive.



[ Q: 1972 ] MRCPass - 2010 May

A 42 year old man presents with frequent diarrhoea and upper abdominal pains.

He had a partial gastrectomy 6 months ago for upper GI bleeding. He is now on high dose

omeprazole twice a day and has been compliant. A repeat endoscopy now shows two oesophageal ulcers.

*What is the appropriate investigation?*

- 1- Barium enema
- 2- insulin tolerance test
- 3- H. pylori serology
- 4- Colonoscopy
- 5- Gastrin levels

#### Answer & Comments

Answer: 5- Gastrin levels

Diarrhea and recurrent gastric ulceration is common with Zollinger Ellison syndrome (gastrinoma).

There would be demonstrable high fasting plasma gastrin levels. Gastrinomas may occurs as part of a multiple endocrine neoplasia syndrome type 1.



[ Q: 1973 ] MRCPass - 2010 May

A 54-year-old woman with history of uncontrolled hypertension presented to the eye clinic with sudden vision loss in the right eye. Ophthalmologic exam showed visual acuity of hand motion in the right eye and 6/6 in the left eye. Pupil exam showed sluggish right pupil with relative afferent papillary defect, and a reactive pupil on the left.

Examination of the right eye showed retinal haemorrhages and extensive areas of capillary non-perfusion.

*What is the diagnosis?*

- 1- Glaucoma
- 2- Retinal vasculitis
- 3- Central retinal vein thrombosis
- 4- Central retinal artery occlusion
- 5- Malignant hypertension

## Answer &amp; Comments

**Answer:** 3- Central retinal vein thrombosis

Clinically, central retinal vein thrombosis presents with visual loss; the fundus may show retinal hemorrhages, dilated tortuous retinal veins, cotton-wool spots, macular edema, and optic disc edema.

Major risk factors are hypertension, diabetes, and atherosclerosis. Other risk factors are glaucoma, syphilis, sarcoidosis, vasculitis, hyperviscosity syndromes (multiple myeloma, Waldenstrom's macroglobulinemia, and leukemia), high homocysteine levels, sickle cell, and HIV.



[ Q: 1974 ] MRCPass - 2010 May

A 36 year old caucasian female presented with malaise, joint pains and Raynaud's phenomenon for the last 6 months. On physical examination she was afebrile and had a supine blood pressure of 110/80mm Hg. Blood tests revealed:

Hb 11.5 g/dl, MCV 85 fl

erythrocyte sedimentation rate of 80 mm/first hour

antinuclear antibody (ANA) - strongly positive

antitopoisomerase I antibody (formerly anti SCL-70 antibody) positive

normal C3 and C4

anti-DNA, anti-centromere, anti-RNP, anti-Ro and La antibodies - negative

*What other feature is likely to be present?*

- 1- Proximal myopathy
- 2- Heliotrope rash
- 3- Calcinosis
- 4- Telangiectasia
- 5- Renal involvement

## Answer &amp; Comments

**Answer:** 5- Renal involvement

The patient is likely to have a diffuse form of scleroderma.

The limited cutaneous form of scleroderma is CREST syndrome (calcinosis, raynauds, esophageal dysmotility, sclerodactyly and telangiectasia).

The diffuse form of scleroderma is more rapidly progressing and affects the skin (cutaneous scleroderma) and one or more internal organs, frequently the kidneys (renal crisis), esophagus, heart (pulmonary hypertension) and lungs (pulmonary fibrosis).

In diffuse scleroderma, antinuclear antibodies are present in about 95% of patients.

Topoisomerase I antibodies (formerly Scl-70) are present in approximately 30% of patients with diffuse disease (absent in limited disease) and are associated with pulmonary fibrosis.

Anticentromere antibodies are present in about 60-90% of patients with limited disease and are rare in patients with diffuse disease.



[ Q: 1975 ] MRCPass - 2010 May

*Which blood gas result may be an analytical error?*

- 1- PH 7.6, PaCO<sub>2</sub> - 2, PO<sub>2</sub> - 13, Bicarbonate 30
- 2- PH 7.3, PaCO<sub>2</sub> - 7, PO<sub>2</sub> - 10, Bicarbonate 14
- 3- PH 7.5, PaCO<sub>2</sub> - 8, PO<sub>2</sub> - 10, Bicarbonate 14
- 4- PH 7.5, PaCO<sub>2</sub> - 6, PO<sub>2</sub> - 12, Bicarbonate 26
- 5- PH 7.2, PaCO<sub>2</sub> - 9, PO<sub>2</sub> 9, Bicarbonate 12

## Answer &amp; Comments

**Answer:** 3- PH 7.5, PaCO<sub>2</sub> - 8, PO<sub>2</sub> - 10, Bicarbonate 14

The patient has a high CO<sub>2</sub> and low bicarbonate which would suggest uncompensated respiratory acidosis, hence the pH shows an alkalosis which is too high to fit the scenario.





[ Q: 1976 ] MRCPass - 2010  
September

A 55 year old lady has known mitral valve stenosis from rheumatic heart disease.

She presents with new symptoms of breathlessness. Upon examination, *which one of the following signs would suggest that she has mitral regurgitation?*

- 1- Displaced apex beat
- 2- Early diastolic murmur in the pulmonary area
- 3- Right ventricular heave
- 4- V wave seen with the JVP
- 5- Opening snap

#### Answer & Comments

**Answer:** 1- Displaced apex beat

In mitral stenosis, the apex beat is classically tapping in nature and not displaced.

Mitral regurgitation on the other hand, causes ventricular strain and dilatation. Most of the other signs described in the above options can occur with pulmonary hypertension due to significant mitral stenosis.



[ Q: 1977 ] MRCPass - 2010  
September

A 49-year-old woman has a history of schizophrenia and is currently on haloperidol (10 mg twice a day) and risperidone (1 mg twice a day).

*The atypical antipsychotic effect of risperidone is due to its action on the:*

- 1- Alpha adrenergic receptor
- 2- Adrenaline receptor
- 3- Acetylcholine receptor
- 4- Serotonin receptor
- 5- Dopamine 2 receptor

#### Answer & Comments

**Answer:** 4- Serotonin receptor

Risperidone is an atypical antipsychotic drug which has more pronounced serotonin antagonism than dopamine antagonism.

It has actions at several 5-HT (serotonin) receptor subtypes. The 'atypical' effects is due to the effectiveness via the 5-HT<sub>2A</sub> receptor, which reduces the extrapyramidal side effects (EPS) experienced with the typical neuroleptics due to the action on the dopamine receptor.



[ Q: 1978 ] MRCPass - 2010  
September

A 40 year old man with diabetic nephropathy and hemodialysis-dependent renal failure is in clinic for evaluation of her blood results. She had been found to have the following : potassium 5.2 mmol/l, calcium 2.20 (2.25-2.7) mmol/l, albumin 42 g/l, phosphate 1.55 (0.8-8) mmol/l, parathyroid hormone (PTH) levels over 220 pg/mL (normal <65 pg/mL).

*What should be prescribed?*

- 1- Calcium acetate
- 2- Cinacalcet
- 3- Alucaps
- 4- Alfacalcidol
- 5- Sando phosphate

#### Answer & Comments

**Answer:** 1- Calcium acetate

This question refers to a patient with likely secondary hyperparathyroidism and hyperphosphataemia rather than hyperparathyroidism being the main problem.

The most significant long-term complication of chronic uncontrolled hyperphosphatemia is the development of vascular calcifications. Patients with secondary hyperparathyroidism



usually have a low -normal calcium and elevated parathyroid hormone (PTH).

Patients with tertiary hyperparathyroidism may have hypercalcaemia along with a high PTH level.

Phosphate binders can be used if hyperphosphatemia persists despite dietary phosphate restriction. These include calcium-based phosphate binders such as calcium carbonate, calcium acetate and non-calcium-based phosphate binders such as sevelamer hydrochloride. Calcium supplementation should be limited to less than 2 g/day.

Cinacalcet is a calcimimetic which inhibits the release of PTH. It is recommended in patients with dialysis who have secondary hyperparathyroidism and a very high PTH level (800 pg/ml).



[ Q: 1979 ] MRCPass - 2010  
September

A 60 year old lady has pain in her knees, shoulders, wrists and fingers. Examination of her hands reveals multiple symmetrical small joint involvement. The proximal and distal joints were affected. Joint X rays show the presence of osteophytes and chondrocalcinosis. She is currently on bendrofluazide and metformin tablets. A urate level on admission was 420 (<380 µmol/l). The rheumatoid factor was positive with a titre of 1:30.

*What is the diagnosis?*

- 1- Polyarticular gout
- 2- Calcium pyrophosphate deposition disease
- 3- Systemic lupus erythematosus
- 4- Haemochromatosis
- 5- Rheumatoid arthritis

#### Answer & Comments

Answer: 2- Calcium pyrophosphate deposition disease

The diagnosis would fit with a subcategory of calcium pyrophosphate deposition disease, which is Pseudoosteoarthritis often involves the metacarpophalangeal (MCP) joints, wrists, elbow s, and shoulders, joints unlikely to be involved with primary osteoarthritis.

It affects the knees most commonly and can involve the proximal interphalangeal (PIP) joints and spine. Osteophytes and chondrocalcinosis are a common radiological finding in patients with a pseudoosteoarthritis condition and usually are present along the second and third metacarpal heads. In addition, older individuals may have low -titer-positive rheumatoid factor as in this case.

Pseudogout is one manifestation of calcium pyrophosphate deposition disease, where joint aspiration fluid might show rhomboid-shaped, positively birefringent crystals. This case is less likely to be gout as it usually affects the knee and big toe. In acute gout the uric acid level is usually normal, so an early urate level is not helpful.



[ Q: 1980 ] MRCPass - 2010  
September

A 55 year old lady with COPD presents with shortness of breath. She has nebulisers at home but not homeoxygen. On admission, her oxygen saturations were 88% and the nurse asks how you would want oxygen given.

*What should you recommend?*

- 1- Nasal cannulae
- 2- Plain mask with non rebreath bag
- 3- Plain mask only
- 4- Venturi mask
- 5- Humidified oxygen mask

#### Answer & Comments

Answer: 4- Venturi mask

The venturi mask, also known as an air-entrainment mask, delivers a known oxygen

concentration to patients on controlled oxygen therapy, this is particularly important in COPD patients.

Venturi masks are considered high-flow oxygen therapy devices. This is because venturi masks are able to provide total inspiratory flow at a specified FIO<sub>2</sub> to patients therapy. The kits usually include multiple jets in order to set the desired FIO<sub>2</sub> which are usually color coded. In the UK, the colours and respective delivery concentrations are; Blue 24%, White 28%, Yellow 35%, Red 40%, Green 60%).



[ Q: 1981 ] MRCPass - 2010  
September

A 24 year old lady was complaining of tremors and sw eating for 6 weeks and referred for assessment. She has lost 6 kg in weight. On examination, she has tremors in the hands and a palpable smooth goitre. An nuclear medicine scan of the neck showed increased and patchy uptake of radio isotope of the thyroid glands. Following tests, she is diagnosed with thyrotoxicosis. Laboratory data confirmed the following results: free T<sub>4</sub>-48 (10-24) pmol/l, TSH < 0.3 (0.3-4) mU/l, antithyroid antibodies negative.

*What is the definitive treatment?*

- 1- Propranolol
- 2- Prednisolone
- 3- Thyroxine
- 4- Radioactive iodine
- 5- Carbimazole

#### Answer & Comments

Answer: 4- Radioactive iodine

This patient has toxic multinodular goitre with features of thyrotoxicosis such as sweats, palpitations, tremors and weight loss.

On nuclear imaging there is usually patchy increased uptake of either radioactive iodine

or technetium isotopes. Whilst antithyroid drugs such as carbimazole or methimazole as well as propranolol can be used for short term treatment, the definitive treatment should be either radioactive iodine or thyroid surgery.



[ Q: 1982 ] MRCPass - 2010  
September

A 40-year-old woman complains of recurrent migraine type headaches. The headaches have been occurring every week, increasing in intensity and are associated with flashing lights. She was treated with paracetamol, diclofenac and sumatriptan with little improvement.

*Which of the following medications would you prescribe?*

- 1- Pizotifen
- 2- Ergotamine
- 3- Propranolol
- 4- Verapamil
- 5- Sodium valproate

#### Answer & Comments

Answer: 3- Propranolol

The actual question did not specify whether the medication was for acute treatment or prophylaxis, but the way it was phrased suggested that it asked for prophylaxis.

Propranolol, verapamil and sodium valproate can all be used for prophylaxis, and propranolol is the most commonly prescribed.



[ Q: 1983 ] MRCPass - 2010  
September

A 25 year old lady presents with abdominal pains and lethargy. She has a history of diabetes and was on insulin.

Clinical examination was unremarkable and she had an abdominal X ray which showed the presence of renal calculi.

Investigations revealed the following:

arterial blood pH 7.30 (7.38-7.44)

serum bicarbonate 12.6 mmol/L (21-28 mmol/L)

sodium 146 (136-145 mmol/L)

potassium 2.8 (3.5-5mmol/L)

chloride 122 (98-106mmol/L)

Anion gap was 15 (normal 7-16 mmol/L)

Urine pH of 6.5 (normal range 5-9)

*What is the likely diagnosis?*

- 1- Multiple myeloma
- 2- Renal tubular acidosis type 1
- 3- Nephrotic syndrome
- 4- Homocystinuria
- 5- Porphyria

#### Answer & Comments

**Answer:** 2- Renal tubular acidosis type 1

The diagnosis of Type 1 RTA is based on the findings of systemic acidosis, low bicarbonate, hypokalemia, a normal anion gap and relatively alkaline urine despite the acidosis.

Type 1 RTA can be familial with autosomal dominant as the most common mode of inheritance. Typical features of type 1 RTA are osteomalacia and nephrocalcinosis.

Associated causes are Sjogren's syndrome, SLE, rheumatoid arthritis, renal transplantation and sickle cell anaemia.

Type II RTA is associated with disorders such as cystinosis, galactosaemia, Wilson's disease, multiple myeloma and Paroxysmal nocturnal haemoglobinuria. The distal intercalated cells function normally, so the acidemia is less severe than dRTA and the urine can acidify to a pH of less than 5.3.



[ Q: 1984 ] MRCPass - 2010  
September

A 57 year old man had a myocardial infarction and was transferred for coronary angiography. A day following this, he developed red dusky discoloration on the right foot and became pyrexial. He had a femoral bruit on the right side on examination. Eosinophilia was noted on the blood tests and he had a creatinine of 650 umol/l.

*Which one of the following is likely?*

- 1- Baker's cyst
- 2- Compartment syndrome
- 3- Cellulitis
- 4- Cholesterol embolism
- 5- Anaphylactic reaction

#### Answer & Comments

**Answer:** 4- Cholesterol embolism

Cholesterol embolism should be suspected in a patient with atherosclerotic disease who has fever and distal ischaemia.

Eosinophilia strongly suggests atheroembolization and is present in as many as 80% of patients with cholesterol embolism syndrome. The patient is also likely to have cholesterol emboli to the kidneys causing renal impairment.



[ Q: 1985 ] MRCPass - 2010  
September

A 48-year-old Filipino man was first noted to have hematuria 5 years ago. He complains of noticing haematuria both at home and at work several times a week. There are no other symptoms. His blood pressure is 130 / 70 mmHg.

Urinalysis during that admission showed trace proteinuria and 2+ blood on the urinary dipstick. His blood tests show :

sodium 135 mmol/l

potassium 4.5 mmol/l

urea 6 mmol/l

creatinine 80 µmol/l

*What is the likely diagnosis?*

- 1- Thin basement membrane disease
- 2- Focal segmental glomerulosclerosis
- 3- Minimal change disease
- 4- Transitional cell carcinoma
- 5- Post streptococcal glomerulonephritis

#### Answer & Comments

**Answer:** 1- Thin basement membrane disease

Thin basement membrane disease (TBMD, also known as benign familial hematuria and thin basement membrane nephropathy) is, along with IgA nephropathy, the most common cause of asymptomatic hematuria.

The only abnormal finding in this disease is a thinning of the basement membrane of the glomeruli in the kidneys. It has a benign prognosis.

Most patients with thin basement membrane disease are incidentally discovered to have microscopic hematuria on urinalysis. The blood pressure, kidney function and the urinary protein excretion are usually normal. Mild proteinuria (less than 1.5 g/day) and hypertension are seen in a small minority of patients. Frank hematuria and loin pain should prompt a search for another cause, such as kidney stones or loin pain-hematuria syndrome.



[ Q: 1986 ] MRCPass - 2010  
September

A 61 year old man has discomfort in the left ankle was noted 2 days. Several weeks ago he had been on a course of antibiotics. He presented to the emergency department with mild, nonpitting oedema of the left calf and ankle, and pain on plantar flexion. A Doppler

study failed to detect a thrombus, and there was no radiologic evidence of a fracture. The patient was diagnosed with a muscle strain Achilles tendon rupture.

*Which drug may have caused this?*

- 1- Ciprofloxacin
- 2- Metronidazole
- 3- Amoxicillin
- 4- Nitrofurantoin
- 5- Gentamicin

#### Answer & Comments

**Answer:** 1- Ciprofloxacin

Disruptions of tendons in adults, including rupture, have been reported in association with fluoroquinolones (ciprofloxacin).

The Achilles tendon is the site most frequently associated with such adverse outcomes.



[ Q: 1987 ] MRCPass - 2010  
September

A 55 year old man has large spade-like hands and finds that he is having to buy shoes of increasing size in the last two years. On examination of his visual fields, bitemporal hemianopia was found.

*Which one of the following tests should be done?*

- 1- Insulin tolerance test
- 2- Hydrocortisone curve
- 3- CT scan of the chest
- 4- Dexamethasone suppression test
- 5- Oral glucose tolerance test with growth hormone

#### Answer & Comments

**Answer:** 5- Oral glucose tolerance test with growth hormone

The case scenario suggests acromegaly.

Growth hormone suppression during oral glucose tolerance and elevated IGF-I levels form the main diagnostic criteria in acromegaly. IGF1 provides the most sensitive and useful lab test for the diagnosis of acromegaly. A single value of the Growth hormone (GH) is not useful in view of its pulsatility (levels in the blood vary greatly even in healthy individuals). GH levels taken 2 hours after a 75 or 100 gram glucose tolerance test are helpful in the diagnosis: GH levels are suppressed below 1 µg/L in normal people, and levels higher than this cutoff are confirmatory of acromegaly.



[ Q: 1988 ] MRCPass - 2010  
September

A 60 year old woman has recently had lethargy and arthralgia. She was diagnosed as having influenza infection, as there was an outbreak in the area recently. She presents 1 week later with a cough and breathlessness. On examination, she had bilateral crackles audible on examination. CXR confirms bilateral consolidation.

*Which one of the following is most likely as a cause?*

- 1- Legionella
- 2- Mycoplasma
- 3- Streptococcus pneumoniae
- 4- Klebsiella
- 5- Staphylococcus aureus

#### Answer & Comments

**Answer:** 5- Staphylococcus aureus

Normal incidence of staph aureus pneumonia is 2%, However this is significantly increased in iv drug users and influenzae virus infections.

Post influenzae staph aureus pneumonia is characterised by rapid clinical deterioration with septicaemia.



[ Q: 1989 ] MRCPass - 2010  
September

A 52-year-old man was admitted because of progressive shortness of breath. He has been a smoker of 5 cigarettes a day for the past two years. He has a past medical history of seropositive rheumatoid arthritis, diabetes mellitus and hypertension. On examination the fingers were clubbed and there were bilateral basal crepitations. Lung function tests showed:

forced expiratory volume in one second (FEV1) of 2.10 l (predicted 3.2 l)

forced vital capacity (FVC) of 2.30 l (predicted 4).

Carbon monoxide transfer factor (TLCO) was reduced to 70% predicted.

There was 5% improvement following salbutamol nebulisers.

*What is the likely diagnosis?*

- 1- COPD
- 2- Asthma
- 3- Pulmonary embolus
- 4- Pulmonary fibrosis
- 5- Pneumothorax

#### Answer & Comments

**Answer:** 4- Pulmonary fibrosis

Although there is slight improvement with salbutamol, the best answer is interstitial lung disease / pulmonary fibrosis.

The FEV1 / FVC ratio is 90% which suggests restrictive lung disease rather than obstructive lung disease. There is also reduced transfer factor (TLCO) because pulmonary fibrosis thickens the alveolar walls. Both of these features are consistent with pulmonary fibrosis.



[ Q: 1990 ] MRCPass - 2010  
September

A patient who recently had a traumatic car accident had to undergo splenectomy during emergency surgery.

*Which of the following is likely to be found in the blood film of the patient?*

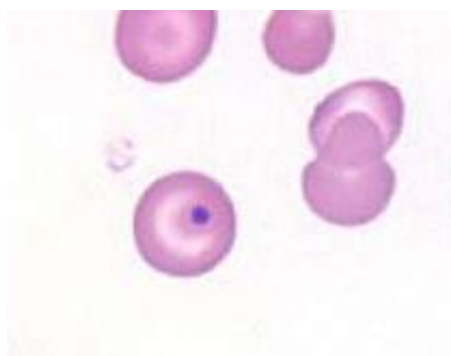
- 1- Schistocytes
- 2- Poikilocytes
- 3- Howell Jolly bodies
- 4- Heinz bodies
- 5- Blast cells

#### Answer & Comments

Answer: 3- Howell Jolly bodies

Howell Jolly bodies are nuclear remnants which appear as basophilic (purple) spots on the eosinophilic (pink) erythrocyte on a standard H&E stained blood smear.

These inclusions are normally pitted out by the spleen during erythrocyte circulation, but will persist in individuals with functional hyposplenism or asplenia.



Howell Jolly Body



[ Q: 1991 ] MRCPass - 2010  
September

A 40 year old man has recently been diagnosed with diabetes. He has been put on oral hypoglycaemic drugs.

History revealed that he has three cousins who also have diabetes. Blood tests revealed

that he had a HBA1c of 9. On examination, he has a BMI of 34. Urine dipstick showed Glucose ++ and Ketones +.

*What is the likely diagnosis?*

- 1- DM type1
- 2- DM type 2
- 3- MODY
- 4- Pancreatic failure
- 5- Drug induced diabetes

#### Answer & Comments

Answer: 2- DM type 2

This patient is unlikely to have Type 1 diabetes and Maturity Onset Diabetes of the Young as the age is > 25 years.

The obese characteristic suggests type 1 diabetes and ketonuria which is mild can occur in type 2 diabetes.



[ Q: 1992 ] MRCPass - 2010  
September

A 65 year old lady has epigastric pain for several months and is referred for endoscopy.

A biopsy taken during the endoscopy confirms MALT lymphoma.

*Which one of the following associations for Helicobacter pylori infection and gastric lymphoma?*

- 1- Gastro oesophageal reflux disease
- 2- Non ulcer forming gastritis
- 3- Duodenal ulcer
- 4- Pancreatic fistula
- 5- Pernicious anaemia

#### Answer & Comments

Answer: 2- Non ulcer forming gastritis

Malignancies that occur in mucosa-associated lymphoid tissue (MALT) are called MALT lymphomas (MALTomas).



Most of the MALTomas occur in the stomach, and roughly 70% of gastric MALTomas are associated with *Helicobacter pylori* infection.

*H. pylori* gastritis is common in individuals who develop gastric lymphomas. Although the aetiology is unknown, this association is established.



[ Q: 1993 ] MRCPass - 2010  
September

A couple presents to the genetic clinic for counselling. The male partner has haemophilia whilst the female partner has been screened and is not a carrier.

*What is the chance that a son would have haemophilia?*

- 1- 25%
- 2- 50%
- 3- 75%
- 4- All sons
- 5- None

#### Answer & Comments

Answer: 5- None

Haemophilia is X linked recessive.

In this case, if the affected X chromosome is designated Xa, the father is XaY and mother XX. The children would be carrying either XaX or XY. In this situation all female children will be carriers and all male children will not be affected.



[ Q: 1994 ] MRCPass - 2010  
September

A 65 year old woman presented with a four-year history of increasing stiffness and immobility which have led to multiple falls. She had had some difficulty in fine finger movement. Her Blood pressure was 130/90 mmHg lying and 135/95 mmHg standing. Examination showed a mask like facies,

bradykinesia, nuchal and limb rigidity. She had an asymmetrical tremor in her hands and cogwheel rigidity in the arms. She had diminished upward conjugate deviation of eyes. There was also short-term memory loss.

*What is the diagnosis?*

- 1- Lewy body dementia
- 2- Alzheimer's disease
- 3- Parkinson's disease
- 4- Multi system atrophy
- 5- Progressive supranuclear palsy

#### Answer & Comments

Answer: 5- Progressive supranuclear palsy

A patient with parkinsonism and gaze palsy suggests a diagnosis of progressive supranuclear palsy.

Progressive supranuclear palsy (PSP), is also known as Steele-Richardson-Olszewski syndrome. Characteristics include supranuclear, primarily vertical, gaze dysfunction accompanied by extrapyramidal symptoms and cognitive dysfunction. The disease usually develops after the sixth decade of life. The most common symptoms at disease onset are postural instability and falls (60%); dysarthria (35%); bradykinesia (15%); and visual disturbances such as diplopia, blurred vision, burning eyes, and light sensitivity



[ Q: 1995 ] MRCPass - 2010  
September

A patient with atrial fibrillation was prescribed digoxin.

*What does it bind to in order to generate its mode of action?*

- 1- Calcium channel
- 2- Potassium channel
- 3- Beta receptors

4- Na / K- ATPase

5- Aldosterone receptors

## Answer &amp; Comments

Answer: 4- Na / K- ATPase

Digoxin, also known as digitalis, is a purified cardiac glycoside.

Digoxin binds to a site on the extracellular aspect of the  $\beta$ -subunit of the  $\text{Na}^+/\text{K}^+$  ATPase pump in the myocytes.

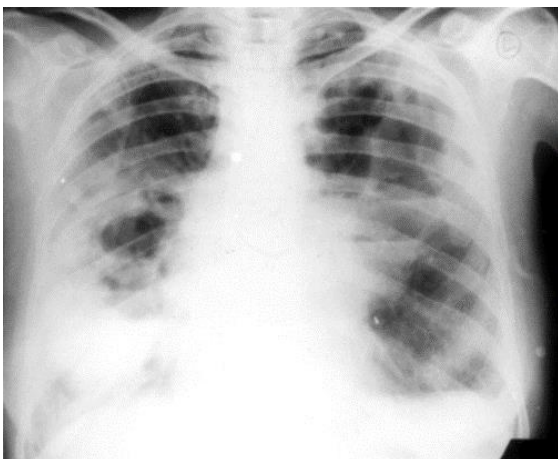


[ Q: 1996 ] MRCPass - 2010  
September

A 36-year-old woman presented to the emergency department with fevers, cough, and dyspnoea for one week.

She drinks 4 units of alcohol per day and admitted to regular intravenous drug abuse. On physical examination, the patient had a temperature of  $38^\circ\text{C}$ , was tachypnoeic and tachycardic. Blood pressure was 120/90 mmHg.

Examination of lungs revealed bilateral coarse crackles and rhonchi. She had a soft systolic murmur heard throughout the precordium. The chest X ray is shown below :



*What is the most likely diagnosis?*

- 1- Calcification of the lung
- 2- Tuberculosis
- 3- Tricuspid endocarditis

4- Pneumocystis carinii pneumonia

5- Schistosomiasis

## Answer &amp; Comments

Answer: 3- Tricuspid endocarditis

The best answers are either tuberculosis or endocarditis.

In this case, due to a history of intravenous drug use the most likely scenario is tricuspid valve endocarditis leading to multiple lung abscesses (as shown on the CXR). If multiple cavities are present, the infection is likely due to haematogenous dissemination (septic emboli), and a source for this dissemination should be sought. The source could be right-sided endocarditis (usually staphylococcal) or infected venous thrombi. Tubercular cavities are usually located in the upper zone, either the posterior segment of the upper lobe or apical segment of lower lobe.



[ Q: 1997 ] MRCPass - 2010  
September

A 42 year old man had a cough and his GP organized a chest X ray. This showed a pneumothorax and he was referred to the hospital. He does not have any symptoms of breathlessness or chest pains. His BP was 110/80 mmHg,  $\text{O}_2$  sats were 99% on air & pulse was 80/min. CXR shows that there is a pneumothorax on the left with calculated size involving 20% of the lung volume.

*Which is the most appropriate step?*

- 1- Observation as outpatient
- 2- Observation as inpatient
- 3- Needle aspiration as outpatient
- 4- Needle aspiration as inpatient
- 5- Discharge with outpatient follow up

## Answer &amp; Comments

**Answer:** 5- Discharge with outpatient follow up

An air rim of 2 cm or more means that the pneumothorax occupies about 50% of the pleural cavity and so this patient is likely to have a rim of air < 2 cm.

The British thoracic society recommends that a small pneumothorax of < 2 cm rim, with no significant symptoms to be managed conservatively (discharge with outpatient review and advise to return if breathlessness occurs).

The 2010 guideline can be downloaded here: <http://www.brit-thoracic.org.uk/Clinical-Information/Pneumothorax/Pneumothorax-Guideline.aspx>



[ Q: 1998 ] MRCPass - 2010  
September

A 33 year old man has had a 6 month history of bilateral hip pains and back pains. There is not past medical history of trauma to the back. Non steroidal anti-inflammatory drugs helped to relieve his symptoms.

*What is the likely diagnosis?*

- 1- Gluteus medius syndrome
- 2- Osteoarthritis
- 3- Avascular necrosis of the hip
- 4- Sacroilitis
- 5- Lumbar canal stenosis

## Answer &amp; Comments

**Answer:** 4- Sacroilitis

Pain and stiffness in the lower back or buttocks, especially in the morning is typical of sacroilitis.

It is typically helped by NSAIDs or steroids. X rays will help to confirm the diagnosis. It is

associated with various inflammatory diseases e.g. ankylosing spondylitis, psoriatic arthritis.

Gluteus medius syndrome can cause buttock pains but there should be a history of overuse of the gluteus muscles which make it consistent with the diagnosis.



[ Q: 1999 ] MRCPass - 2010  
September

A 45 year old man presented with a history of wheeze, cough and fevers for over 3 months. On physical examination, chest auscultation revealed decreased air entry on right upper lung field. Chest X ray pulmonary infiltrates. Investigations show that the sputum culture was negative for acid fast bacilli.

*What is the best test to diagnose allergic bronchopulmonary aspergillosis?*

- 1- Lung function test
- 2- Bronchoscopy
- 3- Precipitin antibodies
- 4- Eosinophil count
- 5- CT scan of the chest

## Answer &amp; Comments

**Answer:** 3- Precipitin antibodies

ABPA is a hypersensitivity reaction to A fumigatus colonization of the tracheobronchial tree which eventually leads to bronchiectasis.

Eosinophil counts and IgE levels are typically high. Lung function tests show decreased lung volumes and gas transfer. Skin prick testing to allergens from Aspergillus fumigatus are positive. Precipitin antibodies (IgG) are commonly found in the serum. Both of these tests are convenient to confirm a diagnosis of ABPA.



[ Q: 2000 ] MRCPass - 2010  
September

A 46-year-old man presents with back pain and on lateral spine x rays was found to have vertebral collapse. His past history is unremarkable. He does not smoke and there is no significant alcohol history. A bone scan was organised which confirmed that he had osteoporosis.

*What test should be sent off to identify the cause of osteoporosis?*

- 1- Thyroid function
- 2- Troponin
- 3- Prolactin
- 4- Testosterone
- 5- Blood glucose

#### Answer & Comments

Answer: 4- Testosterone

Osteoporosis in a young male is unusual, as it is usually seen in post menopausal women.

It is known that testosterone deficiency in a young male and also androgen antagonists in older males with e.g. prostate cancer can cause osteoporosis. Any features of hypogonadism or hypercalcemia should be elicited. Hyperprolactinemia would cause hypogonadism so a testosterone level would be far more relevant. Hyperthyroidism would be present for a considerable length of time before producing osteoporosis.



[ Q: 2001 ] MRCPass - 2010  
September

A 65-year-old is referred for investigation of a progressive history of worsening kidney disease. He has a long history of hypertension. Dipstick analysis of urine shows Blood + and protein +. The Urea is 20 mmol/l and Creatinine 260 umol/l (100). An ultrasound of abdomen requested shows left sided kidney size of 7.5 cm and right kidney size of 10.2 cm.

*Which one of following best investigation diagnose cause of renal failure?*

- 1- Urine for casts
- 2- IV urogram
- 3- Renal angiography
- 4- Renal biopsy
- 5- CT of the kidneys

#### Answer & Comments

Answer: 3- Renal angiography

The history of hypertension, progressive renal impairment and small kidney size suggest renovascular disease.

The best investigation in this case would be either renal angiography or MR angiography.



[ Q: 2002 ] MRCPass - 2010  
September

A 32 year old woman presents with blurred vision and headaches. She has described having had a severe headache at the back of the head and neck 3 weeks ago but did not seek help then. She has a history of hypertension. On examination, she had swollen discs with blurred disc margins bilaterally, and had bilateral 6th nerve palsy.

*What is the likely diagnosis?*

- 1- Multiple sclerosis
- 2- Vertebral artery dissection
- 3- Subarachnoid haemorrhage
- 4- Benign intracranial hypertension
- 5- Essential hypertension

#### Answer & Comments

Answer: 3- Subarachnoid haemorrhage

Subarachnoid hemorrhage should always be suspected in patients with a typical presentation which includes a sudden onset of severe headache (frequently described as the

“worst ever”), with nausea, vomiting, neck pain, photophobia, and loss of consciousness.

Physical examination may reveal retinal hemorrhages, meningism, a diminished level of consciousness, and localizing neurologic signs. Localising signs usually includes third-nerve palsy (posterior communicating aneurysm), sixth-nerve palsy (increased intracranial pressure), bilateral lower extremity weakness or abulia (anterior communicating aneurysm), and the combination of hemiparesis and aphasia or visuospatial neglect (middle cerebral-artery aneurysm).

In benign intracranial hypertension, patients usually present with symptoms related to increased intracranial pressure. These symptoms include headache, transient visual obscurations, and diplopia due to unilateral or bilateral sixth nerve palsy. However, in this case the acute nature of the headache does not make BIH likely.



[ Q: 2003 ] MRCPass - 2010  
September

A 58 year old man presents with dizziness and palpitations. The ECG shows a a broad complex tachycardia.

*Which of the following features favours ventricular tachycardia over supraventricular tachycardia with bundle branch block?*

- 1- Left bundle branch block
- 2- Atrioventricular dissociation
- 3- Heart rate of 180
- 4- QRS complex of 120ms
- 5- Saw tooth waves

#### Answer & Comments

Answer: 3- Heart rate of 180

Differentiating SVT from VT

Features that favour VT are :

QRS of > 140ms,

cannon a waves on JVP, fusion and/or capture beats

dissociated p waves (p wave dissociation)

history of ischaemic heart disease,

right bundle branch block with left axis deviation,

concordance of the QRS complexes in the chest leads

HR >170 beats per minute.



[ Q: 2004 ] MRCPass - 2010  
September

A patient is being assessed for renal transplantation.

*Which one of the following HLA compatibility is the most important?*

- 1- HLA A
- 2- HLA B
- 3- HLA C
- 4- HLA DR
- 5- HLA G

#### Answer & Comments

Answer: 4- HLA DR

ABO blood group matching is the most important, and HLA matching is a relatively minor predictor of transplant outcomes.

However, among HLA matches, DR matching has a greater effect than that of B or A. A study found that HLA-DR mismatches (and the number of rejection episodes) correlated with poor long-term survival



[ Q: 2005 ] MRCPass - 2010  
September

A 52-year-old Asian man presented to the hospital with chest pain and his ECG showed

antero lateral ST elevation myocardial infarction. He was thrombolysed with tenecteplase and his chest pains settled. two days later, he had worsening shortness of breath at rest.

On physical exam patient was in respiratory distress sitting up right, blood pressure was 150/90 mmHg, heart rate 100 bpm, regular, respiratory rate 28/min. Neck veins were not distended and he had no ankle edema. On examination of the cardiovascular system he had an apical systolic murmur. He had bilateral coarse crepitation all over the lungs.

*What is the likely cause of his deterioration?*

- 1- Dressler's syndrome
- 2- Pericardial effusion
- 3- Ventricular septal rupture
- 4- Papillary muscle rupture
- 5- Atrial Fibrillation

#### Answer & Comments

Answer: 4- Papillary muscle rupture

Papillary muscle rupture, as can be caused by a myocardial infarction and or ischemia, leading to the complication of mitral valve prolapse.

The history here of myocardial infarction and also a systolic murmur of mitral regurgitation will fit this description.



[ Q: 2006 ] MRCPass - 2010  
September

A 50 year old lady complained of having to pass urine frequently for several weeks. She was on medications for bipolar disorder, hypertension and diabetes. On investigation the following results were found:

Serum sodium 149 mmol/l

Plasma osmolality 304 mosmol/l (275-290)

Urine osmolality 150 mosmol/l (350-1000)

*What drug may have caused this?*

- 1- Carbamazepine
- 2- Chlorpropamide
- 3- Fluoxetine
- 4- Furosemide
- 5- Lithium

#### Answer & Comments

Answer: 5- Lithium

This patient is having drug induced nephrogenic Diabetes Insipidus based upon her polyuria, low urine osmolality, high plasma osmolality and high sodium.

This is because of a lack of response of the renal tubules to the hormone ADH, leading to an inability to reabsorb water causing low urine osmolality and high urine sodium. The most likely causes of nephrogenic Diabetes Insipidus are Lithium and Demeclocycline.



[ Q: 2007 ] MRCPass - 2010  
September

A 70 year old woman presents to A&E with decreased consciousness and weakness. Her neighbour has not seen her for several days but found her on the floor. A letter provided information that she had a history of hypothyroidism and was normally on beta blockers and thyroid replacement. On examination, her temperature is 35°C and she has a blood pressure of 85 / 40 mmHg. GCS is 11 / 15. A Blood sugar was measured at 2.3 mmol/l.

Blood results show :

sodium 127 mmol/l

potassium 3.6 mmol/l

urea 6 µmol/l

creatinine 100 µmol/l

*What is the next best management step?*

- 1- 10% Dextrose solution
- 2- Oral Thyroxine



- 3- IV Hydrocortisone
- 4- IV T3
- 5- Sliding scale insulin

#### Answer & Comments

**Answer:** 3- IV Hydrocortisone

The scenario is consistent with either myxedema coma or Addison's disease.

In both situations, IV hydrocortisone is recommended.

Myxedema crisis occurs most commonly in elderly patients with long-standing undiagnosed or undertreated hypothyroidism who experience an additional significant stress, including cold environment, infection, or certain medications. However, to avoid adrenal crisis, thyroxine replacement for hypothyroidism should only be initiated after concomitant glucocorticoid deficiency has either been excluded or treated.

Re-warming with blankets or warm fluids are important. Intravenous glucose and normal saline should be carefully administered. IV hydrocortisone (100mg) should be administered. An intravenous loading dose of 200-500 mcg of levothyroxine is also recommended if myxedema is suspected, followed by a daily intravenous dose of 50-100 mcg.



[ Q: 2008 ] MRCPass - 2010  
September

A 56 year old man presents with a 5 day history of left arm pain and weakness. On examination, he has increased tone in the left arm and weakness in the biceps and triceps distribution. There were absent biceps and supinator reflexes. The triceps reflex was brisk. Sensation was reduced around the lateral part of the forearm and elbow. Proprioception was normal.

*What is the likely diagnosis?*

- 1- Syringomyelia
- 2- C5 and C6 disc herniation
- 3- Transverse myelitis
- 4- Neuralgic amyotrophy
- 5- Guillain barre syndrome

#### Answer & Comments

**Answer:** 2- C5 and C6 disc herniation

This clinical history fits C5 / 6 disc herniation or cord compression.

The weakness and distribution of abnormal reflexes - biceps jerk (C5, C6), triceps jerk (C6, C7) and supinator jerk (C5, C6) suggest that the areas around C5 and C6 being affected. There are mixed upper motor neuron (increased tone) and lower motor neuron (absent reflex). The biceps and supinator reflexes (C5 and C6) may be absent, with a brisk triceps reflex (C7). This pattern is almost pathognomonic of cord compression because of cervical spondylosis at the C5-C6 interspace.



[ Q: 2009 ] MRCPass - 2010  
September

A 60 year old man presents with dysphagia and dysphonia. Cranial nerve examination revealed left-sided partial ptosis with miosis, left sided facial weakness, tongue deviation to the left, an absent gag reflex, palatal palsy on the left, a weak voice, and a wasted left sternocleidomastoid muscle.

*Which one of the following areas is neurological damage most likely?*

- 1- Pons
- 2- Lateral ventricles
- 3- Jugular foramen
- 4- Stylomastoid foramen
- 5- Cerebellopontine

## Answer &amp; Comments

**Answer:** 3- Jugular foramen

The diagnosis is likely to be either Villaret's syndrome or a jugular foramen syndrome.

Villaret's is a rare syndrome characterized by an ipsilateral paralysis of cranial nerves numbers IX, X, XI, XII, and it can also involve the cervical ganglia of the sympathetic trunk. The jugular foramen allows passage through of IX, X and XI cranial nerves.



[ Q: 2010 ] MRCPass - 2010  
September

A 36 year old man has developed gynaecomastia after a new medication was commenced for 6 months.

*Which one of the following drugs is likely to have caused the gynaecomastia?*

- 1- Amiodarone
- 2- Buserelin
- 3- Thioridazine
- 4- Erythromycin
- 5- Ibuprofen

## Answer &amp; Comments

**Answer:** 2- Buserelin

Common drugs which can cause gynaecomastia are digoxin, oestrogens, spironolactone, cimetidine, verapamil and nifedipine.

Buserelin is a new one to add to the MRCP list.

Buserelin is a Gonadotropin-releasing hormone agonist (GnRH agonist). Like other GnRH agonists, buserelin may be used in the treatment of hormone-responsive cancers such as prostate cancer or breast cancer. Occasional gynaecomastia (increase in breast size) which is usually painless, atrophy of the testes, decrease in libido and potency may occur.



[ Q: 2011 ] MRCPass - 2010  
September

A 24 year old health worker had a needlestick injury on a finger after taking blood from a patient who was positive for HIV. Following the injury, the wound on the finger was thoroughly cleaned under clean running water.

*What is the percentage chance that the worker might contract HIV?*

- 1- 1 in 3
- 2- 1 in 30
- 3- 1 in 300
- 4- 1 in 3000
- 5- 1 in 30000

## Answer &amp; Comments

**Answer:** 3- 1 in 300

The rate of occupational transmission from an HIV-positive source is believed to be 0.3% for a percutaneous exposure, which is much lower than Hepatitis B or Hepatitis C transmission.

Taking this number into account, the risk works out to be 1 in 300.



[ Q: 2012 ] MRCPass - 2010  
September

A 50- year- old male presented with sudden worsening of breathlessness after a severe episode of pneumonia was thought to have developed acute respiratory distress syndrome (ARDS).

*Which of the following features would support a diagnosis of ARDS?*

- 1- High pulmonary capillary wedge pressure
- 2- High protein pulmonary oedema
- 3- Hypercapnea
- 4- Increased lung compliance
- 5- Normal chest x- ray

## Answer &amp; Comments

**Answer:** 2- High protein pulmonary oedema

**Answer:** B): high protein pulmonary oedema

ARDS is characterised by hypoxaemia, reduced lung compliance (stiff lungs) and pulmonary infiltrates on the chest x-ray.

There is also no cardiogenic cause for pulmonary oedema (the Pulmonary Capillary Wedge pressure has to be normal or less than 18mmHg to confirm this).

Histologically, in ARDS there is damage to the capillary and endothelial cell linings, resulting in leakage of proteins into the interstitial and alveolar spaces at normal pulmonary capillary hydrostatic pressures - hence causing pulmonary oedema with high protein. In cardiac failure the protein levels of pulmonary oedema fluid are low.



[ Q: 2013 ] MRCPass - 2010  
September

A 50 year old man with a past history of alcohol abuse presents with a painful red and warm ankle which was tophaceous. Gout was diagnosed and he was prescribed allopurinol.

*What is allopurinol's mechanism of action?*

- 1- Uricosuric drug
- 2- Non steroidal anti inflammatory drug
- 3- Microtubule inhibitor
- 4- Xanthine oxidase inhibitor
- 5- Dihydrofolate reductase inhibitor

## Answer &amp; Comments

**Answer:** 4- Xanthine oxidase inhibitor

Hypouricaemic agents essentially comprise of xanthine oxidase inhibitors (for example, allopurinol) and uricosuric agents (for example, probenecid, sulphinpyrazone, benzbromarone or azapropazone).

Standard teaching is that urate lowering drugs should not be introduced during an acute episode as it may worsen or prolong the episode; furthermore initiation of hypouricaemic treatment may precipitate acute gout. Colchicine and NSAIDs can be used in the acute situation.



[ Q: 2014 ] MRCPass - 2010  
September

*How does the body handle excess amounts of cortisol?*

- 1- Binds to albumin
- 2- Binds to adipose tissue
- 3- Inactivated in the liver
- 4- Excreted as free cortisol in the urine
- 5- Broken down by enzymes

## Answer &amp; Comments

**Answer:** 4- Excreted as free cortisol in the urine

Most serum cortisol (all but about 4%) is bound to proteins, including corticosteroid binding globulin (CBG) and serum albumin.

However, when there is excess cortisol there will be insufficient binding capacity. This excess free cortisol is excreted in the urine, which is why it is a good diagnostic test for Cushing's syndrome.



[ Q: 2015 ] MRCPass - 2010  
September

A 54 year old man presents with acute chest pains 1 hour ago. On arrival to the emergency department, he was found to have ST elevation of 2-3 mm from leads V1 to V4 and deep T wave inversion in the inferior leads. He was transferred immediately for coronary angiography.

*What is the likely finding?*

- 1- 70% stenosis of the left anterior descending artery
- 2- 70% stenosis of the right coronary artery
- 3- Total occlusion of the left anterior descending artery
- 4- Total occlusion of the right coronary artery
- 5- Total occlusion of the right coronary artery and the left anterior descending artery

#### Answer & Comments

**Answer:** 3- Total occlusion of the left anterior descending artery

The distribution of the ECG changes in the chest leads V1-6 suggests that it is an anterior myocardial infarction and hence total occlusion of the left anterior descending artery will be a likely finding.

The T wave inversions in the inferior leads are due to reciprocal changes.



[ Q: 2016 ] MRCPass - 2010  
September

A 75-year-old woman presented with a 18 month history of progressive dysphagia to both solids and liquids, as well as a 3 kg weight loss. She typically complained of heartburn especially when lying down and after food. On examination, there were no palpable masses or lymphadenopathy found. A chest X ray showed dilatation of the oesophagus with a fluid level.

**What is the most likely diagnosis?**

- 1- Oesophageal carcinoma
- 2- Pancreatic malignancy
- 3- Achalasia
- 4- Gastroduodenal ulcer
- 5- Zollinger Ellison syndrome

#### Answer & Comments

**Answer:** 3- Achalasia

Achalasia is characterized by difficulty swallowing, regurgitation, and sometimes chest pain.

the lower esophageal sphincter fails to relax, leading to dilatation of the oesophagus. On a barium swallow, this leads to a bird's beak appearance.



[ Q: 2017 ] MRCPass - 2010  
September

A 63 year old man presents with an episode of amnesia for the second time in two months. 2 days ago he had an episode of confusion, according to his wife. He was, However, able to have a normal conversation despite having been found wandering. After 2 hours, he abruptly returned to normal and could not remember what happened.

**What is the most likely diagnosis?**

- 1- Alcoholic encephalopathy
- 2- Subarachnoid haemorrhage
- 3- Complex partial seizure
- 4- Transient ischaemic attack
- 5- Transient global amnesia

#### Answer & Comments

**Answer:** 5- Transient global amnesia

Transient global amnesia (TGA) is a temporary and isolated disorder of memory which may last several hours.

Precipitating factors include sexual intercourse and heavy physical exercise, particularly swimming in cold water.



[ Q: 2018 ] MRCPass - 2010  
September

A 53-year-old man with a history of anaemia and abdominal discomfort is diagnosed as having chronic myeloid leukaemia.

**What is the mechanism of action of imatinib?**

- 1- EGF receptor antagonist

- 2- Anti VEGF receptor antagonist
- 3- Anti-CD20 monoclonal antibody
- 4- P53 inhibitor
- 5- Tyrosine kinase inhibitor

#### Answer & Comments

**Answer:** 5- Tyrosine kinase inhibitor

Imatinib (Gleevec) is an inhibitor of the tyrosine kinase associated with the BCR-ABL defect.

It is used in treating chronic myelogenous leukemia (CML) and gastrointestinal stromal tumors.



[ Q: 2019 ] MRCPass - 2010  
September

A 55 year old man has multiple endocrine neoplasia type II. There is a history of parathyroid neoplasia and pheochromocytoma.

*Which one of the following thyroid conditions is associated?*

- 1- Anaplastic thyroid carcinoma
- 2- Follicular thyroid carcinoma
- 3- Papillary thyroid carcinoma
- 4- Medullary thyroid carcinoma
- 5- Insulinoma

#### Answer & Comments

**Answer:** 4- Medullary thyroid carcinoma

MEN 1 associations are: pituitary tumour, parathyroid hyperplasia/tumour, pancreatic tumours (most commonly gastrinoma / insulinoma).

MEN 2a is associated with medullary thyroid carcinoma (MTC), parathyroid tumours (10-20%) and pheochromocytoma (20-50%).

MEN 2b is associated with presentation of medullary thyroid carcinoma, parathyroid

tumours and pheochromocytoma + ganglioneuromatosis (pathognomonic).



[ Q: 2020 ] MRCPass - 2010  
September

A 75-year-old woman was admitted to the hospital because of fever, chills, headaches and myalgia.

Her husband mentions that she has vomiting and is very confused. She also had new symptoms of urinary incontinence. She has recently returned from a seven-day holiday in Kenya. On physical examination, her blood pressure was 105/70 mmHg, pulse rate 120 beats/ minute and body temperature 39°C. Her MMSE score is 17 / 30. Except for right upper abdominal pain, there were no other abnormalities, and no hepatosplenomegaly. Neurological examination was normal. Laboratory investigations showed raised liver enzymes, mild renal dysfunction. Urine dipstick showed 1+ proteinuria and nitrite -ve.

*What is the most likely infection?*

- 1- Urinary Tract Infection
- 2- Dengue Fever
- 3- Cerebral Malaria
- 4- Leptospirosis
- 5- Listeria

#### Answer & Comments

**Answer:** 3- Cerebral Malaria

*P. falciparum* infection is common in Kenya. The acute history and associated confusion and renal involvement makes malaria most likely. *P. falciparum* can cause cerebral malaria (confusion, seizures, headaches), pulmonary

edema, rapidly developing anemia, and renal problems. Proteinuria is an early sign of renal involvement.

Dengue is likely to be associated with a rash and thrombocytopenia. Urinary tract infection

doesn't quite fit with the scenario or travel to Kenya and should not cause headaches.



[ Q: 2021 ] MRCPass - 2010  
September

A 80 year old woman presents with a swelling over the right side of her nose. The lesion was noticed 4 years ago and was little changed. On examination it was smooth, shiny and non pigmented.

*What is the probable diagnosis?*

- 1- Trophic ulcer
- 2- Basal cell carcinoma
- 3- Lupus vulgaris
- 4- Seborrhoeic warts
- 5- Squamous cell carcinoma

#### Answer & Comments

Answer: 2- Basal cell carcinoma

Basal cell carcinomas can have many different appearances: a red patch or irritated area; a smooth, shiny and waxy looking bump; a white or yellow scar-like area; a smooth reddish growth; or an open sore that won't heal, bleeds or oozes.

They are slow growing as described in this case, and rarely metastasise.



Basal Cell Carcinoma



[ Q: 2022 ] MRCPass - 2010  
September

A 30 year old lady with pulmonary hypertension is prescribed bosentan.

*What is its mechanism of action?*

- 1- Phosphodiesterase 5 inhibitor
- 2- Calcium channel antagonist
- 3- Prostaglandin analogue
- 4- Vasopressin analogue
- 5- Endothelin receptor antagonist

#### Answer & Comments

Answer: 5- Endothelin receptor antagonist

Bosentan is a competitive antagonist of endothelin-1 at the endothelin-A (ET-A) and endothelin-B (ET-B) receptors.

Under normal conditions, endothelin-1 binding of ET-A or ET-B receptors causes pulmonary vasoconstriction.

By blocking this interaction, bosentan decreases pulmonary vascular resistance.



[ Q: 2023 ] MRCPass - 2010  
September

A 36 year old lady with systemic lupus erythematosus has features of joint arthritis and photosensitive skin rashes. She is being followed up in the rheumatology clinic. *During assessment, which one of these tests is the most useful for monitoring disease activity?*

- 1- Antinuclear antibody
- 2- C3 and C4
- 3- Anti Sm antibody
- 4- ESR
- 5- Anti CCP antibody

#### Answer & Comments

Answer: 2- C3 and C4



Many factors may be used to monitor disease activity (according to the Systemic Lupus Erythematosus Disease Activity Index - see link below).

Falling levels of C3 and C4 may herald a lupus flare in patients. Antinuclear antibodies (ANA) are positive in more than 95% of patients with lupus and therefore not useful for monitoring disease activity. Antibodies to dsDNA may fluctuate with disease activity and rising antibodies to dsDNA can help in monitoring disease activity. Other routinely available autoantibodies have not been demonstrated to be helpful as markers of lupus activity.

<http://www.rheumatology.org/practice/clinical/indexes/sledai.asp>



[ Q: 2024 ] MRCPass - 2010  
September

*Which one of the following techniques is used to determine the molecular structure of protein?*

- 1- Northern blotting
- 2- Southern blotting
- 3- X ray crystallography
- 4- Western blotting
- 5- Polymerase chain reaction

#### Answer & Comments

Answer: 1- Northern blotting

X-ray crystallography is a method of determining the arrangement of atoms within a crystal, in which a beam of X-rays strikes a crystal and diffracts into many specific directions.

The method reveals the structure of many biological molecules, including vitamins, drugs, proteins and nucleic acids such as DNA.

The Western blot is a technique involving electrophoresis to detect specific proteins in

the given sample of tissue homogenate or extract (e.g. in HIV testing, or to detect prions in Bovine Spongiform Encephalopathy).

Northern blotting detects RNA and Southern blotting detects DNA.



[ Q: 2025 ] MRCPass - 2010  
September

A 26 year old man was brought into hospital having drunk 2 bottles of engine coolant. He was found to have metabolic acidosis and was treated with fomepizole.

*What is its mechanism of action on alcohol dehydrogenase?*

- 1- Competitive inhibitor
- 2- Non competitive inhibitor
- 3- Specific Agonist
- 4- Anti-metabolite
- 5- Neutralisation

#### Answer & Comments

Answer: 1- Competitive inhibitor

Fomepizole or 4-methylpyrazole is indicated for use as an antidote in confirmed or suspected methanol or ethylene glycol poisoning.

It is a competitive inhibitor of alcohol dehydrogenase, the enzyme that catalyzes the initial steps in the metabolism of ethylene glycol and methanol to their toxic metabolites.



[ Q: 2026 ] MRCPass - 2010  
September

A 65-year-old female is brought to A&E by her family, who are concerned about her increasing confusion over the past 2 days. There is a history of diarrhea in the preceding few days. On examination she is found to be pyrexial at 38°C. Breath sounds are clear and there is mild tenderness in the lower

abdomen. There was no focal neurological signs.

Blood tests reveal :

Hb 9.6 g/dl

WCC  $12 \times 10^9/l$

Platelets  $65 \times 10^9/l$

sodium 138 mmol/l

potassium 4.7 mmol/l

Urea 18.1 mmol/l

Creatinine 210 mmol/l

A blood film shows schistocytes and thrombocytopenia.

*What is the most likely diagnosis?*

- 1- Wegener's granulomatosis
- 2- Thrombotic thrombocytopenic purpura
- 3- Goodpasture's disease
- 4- Idiopathic thrombocytopenic purpura
- 5- Rapidly progressive glomerulonephritis

#### Answer & Comments

Answer: 2- Thrombotic thrombocytopenic purpura

Thrombotic thrombocytopenic purpura (TTP), involvement of the CNS predominates in TTP (neurological signs) whilst in HUS there is mainly renal involvement.

Most cases of TTP arise from inhibition of the enzyme ADAMTS13, a metalloprotease responsible for cleaving large multimers of von Willebrand factor (vWF) into smaller units.

Neurologic symptoms (confusion, headaches, stroke), low platelet count, renal impairment and microangiopathic haemolytic anaemia are present.



[ Q: 2027 ] MRCPass - 2010  
September

A 30 year old man presented with an

erythematous, swollen leg. An ultrasound scan confirmed the diagnosis of deep vein thrombosis. Upon questioning he has a family history of thrombophilia.

*Which one of the following is likely to cause resistance to activation by protein C?*

- 1- Anti thrombin III deficiency
- 2- Protein C deficiency
- 3- Protein S deficiency
- 4- Factor V Leiden variant
- 5- Antiphospholipid syndrome

#### Answer & Comments

Answer: 4- Factor V Leiden variant

Factor V Leiden variant is the most common hereditary hypercoagulability disorder amongst Europeans.

Leiden variant of factor V cannot be inactivated by activated protein C.

To diagnose Factor V Leiden deficiency, Most laboratories screen 'at risk' patients with either a snake venom (e.g. dilute Russell's viper venom time) based test or an aPTT based test. This is done by running two tests simultaneously, one test is run in the presence of activated protein C (APC) and the other, in the absence. A ratio is determined based on the two tests and the results signify to the laboratory whether APC is working or not.



[ Q: 2028 ] MRCPass - 2010  
September

A 55 year old patient has undergone gastric bypass surgery for treatment of obesity 6 months ago. She is not compliant with prescribed vitamins and now presents with general lethargy.

*Which of the following is commonly deficient in Gastric bypass surgery?*

- 1- Iron
- 2- Folate

- 3- Zinc
- 4- Vitamin K
- 5- Vitamin C

#### Answer & Comments

Answer: 1- Iron

Gastric acidity helps absorption of iron and also intrinsic factor produced in the stomach helps absorption of B12.

Following gastric bypass surgery, iron and B12 deficiency are common (about 30% of patients).

As B12 isn't on the answer options Iron is the best answer here. Folate deficiency following obesity surgery is rare.



[ Q: 2029 ] MRCPass - 2010  
September

A 27 year old man presents with a 6 month history of low back pain. The pain radiates to his buttocks. There is associated stiffness which is worse in the morning and after periods of inactivity.

*Which of the following signs is most likely to be present?*

- 1- Positive straight leg test
- 2- Positive femoral stretch test
- 3- Positive Trendelenburg test
- 4- Sacroiliac joint tenderness
- 5- Global immobile vertebrae

#### Answer & Comments

Answer: 4- Sacroiliac joint tenderness

The diagnosis is ankylosing spondylitis and the sign is related to early disease so the best answer is sacroiliac joint tenderness.

Examination of the sacroiliac joints and the spine (including the neck), measurement of chest expansion and range of motion of the

hip and shoulder joints, and a search for signs of enthesitis are critical in making an early diagnosis of AS. Important physical findings include tenderness over sacroiliac joints, vertebral spinal processes, iliac crest, anterior chest wall, calcaneus ischial tuberosities, greater trochanters, and tibial tubercles.

With longer disease duration and disease progression, the spine becomes increasingly stiff, leading to loss of spinal mobility in all planes and restricted chest expansion.



[ Q: 2030 ] MRCPass - 2010  
September

A 52 year old man with heavy alcohol intake presents with haemetemesis. On examination, he had signs of pallor, jaundice and ascites. He was transfused 4 units of blood and when his blood tests were available, he had significant liver and renal impairment which confirmed hepatorenal syndrome. Terlipressin was commenced.

*What is the mechanism of action of terlipressin?*

- 1- Increase erythropoietin levels
- 2- Vasodilation of coronary arteries
- 3- Decrease hypoxia
- 4- Splanchnic vasoconstriction
- 5- Decrease renal perfusion

#### Answer & Comments

Answer: 4- Splanchnic vasoconstriction

Terlipressin (triglycyl lysine vasopressin) is a synthetic analogue of vasopressin, which has been used in the treatment of acute variceal hemorrhage and in hepatorenal syndrome.

In hepatorenal syndrome, it helps by reversing the extreme splanchnic arterial vasodilation that occurs in these patients, effectively increasing arterial blood volume.



[ Q: 2031 ] MRCPass - 2010  
September

A 51-year-old female was seen in the Emergency department with a 2 day history of headaches and fever. On examination, there was also evidence of meningism as shown by presence of a positive Kernig's sign. The patient had a temperature of 38.5°C. A lumbar puncture was performed. CSF showed evidence of gram positive bacilli.

*What is the diagnosis?*

- 1- Hemophilus influenzae
- 2- Staphylococcus aureus
- 3- Listeria monocytogenes
- 4- Streptococcus pneumoniae
- 5- Legionella pneumophila

#### Answer & Comments

**Answer:** 3- Listeria monocytogenes

This patient has signs consistent with meningitis.

Gram positive bacilli (rods) include clostridia (clostridium tetani), listeria monocytogenes and bacilli (bacillus cereus). Legionella and haemophilus are gram negative bacilli.



[ Q: 2032 ] MRCPass - 2010  
September

A 55-year-old man with a history of Crohn's disease comes for review. 5 years ago he had abdominal surgery and has been symptom free until now. Recently though, he has started to experience discomfort around the stoma site from the previous surgery. On examination a deep erythematous, violaceous ulcer is noted with a ragged edge. The surrounding skin is erythematous and swollen.

*What is the most likely diagnosis?*

- 1- Erythema nodosum
- 2- Contact dermatitis
- 3- Pyoderma gangrenosum

- 4- Necrotising fasciitis
- 5- Crohn's disease ulceration

#### Answer & Comments

**Answer:** 3- Pyoderma gangrenosum

Pyoderma gangrenosum is associated with inflammatory bowel disease and may be seen around the stoma site.

Treatment is usually with immunosuppressants.



Pyoderma Gangrenosum



[ Q: 2033 ] MRCPass - 2010  
September

A 55-year-old man presented because of a fever (up to 40°C) that had begun 12 days earlier and persisted despite treatment with oral antibiotics and anti-inflammatory drugs.

The fever episodes occurred every 48 hours, with high peaks followed by abrupt resolution. He had just returned from India a month ago, and had not received any anti-malarial prophylaxis.

On presentation, he was pyrexial and pale, tachycardic and had hepatosplenomegaly. Microscopy of peripheral blood smears showed trophozoites with a parasitemia of 1.5%. Some enlarged, infected erythrocytes, with morphology typical of Plasmodium vivax parasites, were observed.

*What is the best antimalarial treatment?*

- 1- Quinine
- 2- Chloroquine

- 3- Mefloquine
- 4- Pyrimethamine and sulphadiazine
- 5- Artesunate

#### Answer & Comments

**Answer:** 2- Chloroquine

*Plasmodium vivax* is found mainly in Asia, Latin America, and in some parts of Africa.

Chloroquine is the treatment of choice for vivax malaria, except in Indonesia's Irian Jaya region and Papua New Guinea, where chloroquine resistance is common (then artesunate is the treatment of choice). Mefloquine is an alternative.



[ Q: 2034 ] MRCPass - 2010  
September

A 34 year old African man with known HIV infection presents with several episodes of seizures. His CD4 count was 130 cells/mm<sup>3</sup> when measured 1 month ago. On examination, he had a temperature of 38 °C and was confused with an MTS score of 5/10. There were no focal neurological signs. He had an MRI scan which shows multiple ring enhancing lesions. CSF examination showed an elevated protein count, lymphocytosis and normal

glucose levels. The CSF cryptococcal antigen was negative. A chest X ray was normal.

*What is the likely diagnosis?*

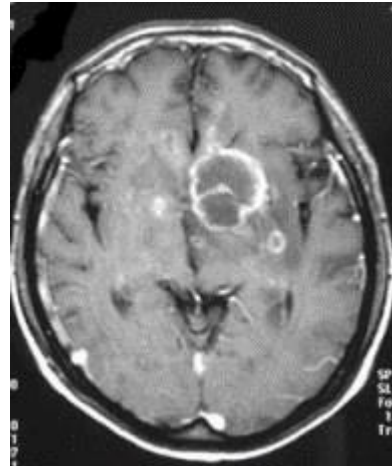
- 1- Progressive multifocal leukoencephalopathy
- 2- Cerebral toxoplasmosis
- 3- Cerebral lymphoma
- 4- Tuberculosis
- 5- Bacterial meningitis

#### Answer & Comments

**Answer:** 2- Cerebral toxoplasmosis

The likely diagnosis is cerebral toxoplasmosis as there are multiple ring enhancing lesions.

Lymphoma usually causes single enhancing lesions and PML is less frequently ring enhancing. Tuberculosis frequently causes significantly low glucose levels.



Cerebral Toxoplasmosis



[ Q: 2035 ] MRCPass - 2010  
September

A 23-year-old woman comes for review. She was diagnosed with asthma two years ago and is currently using a salbutamol inhaler 100mcg PRN combined with beclometasone dipropionate inhaler 200mcg twice a day. She continues to get frequent episodes of wheeziness and shortness of breath with low peak flow readings. She counted that she had 4 exacerbations in the last month. She has a good inhaler technique and today her PEFR is 90% of predicted.

*What is the most appropriate next step in management?*

- 1- Switch steroid to fluticasone propionate
- 2- Increase beclometasone dipropionate to 1000mcg bd
- 3- Trial of montelukast
- 4- Add salmeterol
- 5- Add tiotropium



## Answer &amp; Comments

**Answer:** 4- Add salmeterol

The management of stable asthma is now well established with a step-wise approach:

Step 1:- Inhaled short-acting B2 agonist as required

Step 2:- Add inhaled steroid at 200-800 mcg/day\*

Step 3:- Add inhaled long-acting B2 agonist (LABA), such as salmeterol

If control still inadequate, institute trial of other therapies, leukotriene receptor antagonist or slow release theophylline



[ Q: 2036 ] MRCPass - 2010  
September

A 63-year-old man is admitted with palpitations to the Emergency Department.

An ECG on admission shows a broad complex tachycardia at a rate of 150 bpm. His blood pressure is 124/82 mmHg and there is no evidence of heart failure.

*Which one of the following is least appropriate to give?*

- 1- Procainamide
- 2- Lidocaine
- 3- Verapamil
- 4- Synchronised DC shock
- 5- Adenosine

## Answer &amp; Comments

**Answer:** 3- Verapamil

Verapamil should not be given to a patient with a broad complex tachycardia as it may precipitate ventricular fibrillation in patients with ventricular tachycardia.

This is because calcium channels are concentrated in the sino atrial and atrioventricular nodes. Similarly, digoxin is

contraindicated in broad complex tachycardias. Adenosine can be given even though it blocks the AV node as it is very short acting.



[ Q: 2037 ] MRCPass - 2010  
September

A 61 year old man presented with fevers, lethargy and 2 month history of malaise. He also mentioned altered bowel habit. On examination, he had a temperature of 39°C and a soft systolic murmur in the mitral area. He also had several splinter haemorrhages. Blood culture results within 24 hours grew streptococcus bovis.

*What investigation will help determine the underlying source of infection?*

- 1- Abdominal x ray
- 2- Colonoscopy
- 3- CT scan of the chest
- 4- Skin biopsy
- 5- Transoesophageal echocardiogram

## Answer &amp; Comments

**Answer:** 2- Colonoscopy

A correlation exists between colon cancer and Strep. bovis proliferation in the large intestine, hence predisposing to endocarditis. The patient needs a colonoscopy which may identify a colorectal malignancy predisposing to strep bovis bacteraemia and endocarditis.



[ Q: 2038 ] MRCPass - 2010  
September

A 66 year old woman complains of fevers, weight loss, joint pains and diarrhoea. A jejunal biopsy reveals flattened mucosa containing periodic acid-Schiff (PAS) positive macrophages.

*What is the most likely diagnosis?*

- 1- Coeliac disease



- 2- Campylobacter infection
- 3- Tropical sprue
- 4- Whipple's disease
- 5- Giardiasis

#### Answer & Comments

**Answer:** 4- Whipple's disease

Whipple's disease, may be confirmed by small bowel biopsy.

This will show large, foamy PAS positive macrophages in the lamina propria. Whipple's disease affects mainly men aged 30 to 60. It is caused by an infection with *Tropheryma whippelii*. Symptoms of Whipple's disease include diarrhea, inflamed and painful joints, fever, and skin darkening. Severe malabsorption results in weight loss along with fatigue and weakness caused by anemia.

Antibiotics such as tetracycline, co-trimoxazole and penicillin can be used for treatment (6-12 months).



[ Q: 2039 ] MRCPass - 2010  
September

A 60 year old lady presented with a fall and fractured wrist. She was organised to have a DEXA scan. This showed a T score of -2.6 in the hip and a score of -2.1 in the femur.

**What does this mean?**

- 1- Normal values on the scan
- 2- Osteopenia of the hip and osteoporosis of the femur
- 3- Osteoporosis of the hip and osteopenia of the femur
- 4- Osteopenia of both areas
- 5- Osteoporosis of both areas

#### Answer & Comments

**Answer:** 3- Osteoporosis of the hip and osteopenia of the femur

The T score is usually used to make treatment decisions using standard deviation (SD).

The SD measures the difference between the BMD and that of a healthy young adult (the reference value). Every -1 SD ("minus 1 standard deviation") equals a 10 to 12% decrease in bone density. T score results are classified as follows:

A T score between 0 and -1 standard deviation (SD) is considered to be normal.

A T score between -1 and -2.5 SD is classified as osteopenia (low bone mass).

A T score of -2.5 SD or less is classified as osteoporosis (very low bone mass).



[ Q: 2040 ] MRCPass - 2010  
September

A 30-year-old female was referred for evaluation of lethargy. 2 months prior to referral, she had developed high grade continuous fever of acute onset for which she consulted a general practitioner. She was administered various courses of antibiotics and antiviral drugs. treatment but with no relief. Physical examination revealed pallor but no other physical signs. There was no clubbing, cyanosis or any significant lymphadenopathy.

Her blood tests results are: Hb 6.5 g/dl, MCV 79 fl, WCC  $2.4 \times 10^9/l$ , platelets  $85 \times 10^9/l$ .

**What is the likely cause?**

- 1- Acyclovir
- 2- Chloramphenicol
- 3- Trimethoprim
- 4- Amoxicillin
- 5- Erythromycin

#### Answer & Comments

**Answer:** 2- Chloramphenicol

From the investigations, this patient is likely to have aplastic anaemia.

Aplastic anemia is sometimes associated with exposure to substances such as benzene, radiation, or to the use of drugs, including chloramphenicol, sulphonamides, carbamazepine, phenytoin, quinine, and phenylbutazone (Some candidates answered trimethoprim, but it is the incorrect choice as it is the sulphonamide component that causes aplastic anaemia rather than trimethoprim in examples such as co-trimoxazole)



[ Q: 2041 ] MRCPass - 2010  
September

*Which one of the following is the most common underlying mechanism leading to long QT syndrome?*

- 1- Opening of calcium channels
- 2- Opening of potassium channels
- 3- Opening of sodium channels
- 4- Blocking sodium channels
- 5- Blocking potassium channels

#### Answer & Comments

**Answer:** 5- Blocking potassium channels

Most candidates answered either blockage of sodium or potassium channels.

Although it can be caused by blockage of sodium, potassium or calcium channels, around 90% of inherited long QT syndrome are due to defects in potassium channels



[ Q: 2042 ] MRCPass - 2010  
September

A 41 year old man presented to his GP because of painful blisters on the backs of his hands in the summer. He also had a similar rash on the forehead. His face and forehead were covered with thickly wrinkled, hyperpigmented skin. The patient's urine was reddish orange.

*What is the likely diagnosis?*

- 1- Contact dermatitis
- 2- Pityriasis rosea
- 3- Epidermolysis bullosa
- 4- Pemphigoid
- 5- porphyria cutanea tarda

#### Answer & Comments

**Answer:** 5- porphyria cutanea tarda

In porphyria cutanea tarda, the urine fluoresces pink to red.

Porphyria cutanea tarda's onset is typically during the fourth or fifth decade of life. The disease tends to develop, recur, or worsen during the spring and summer, when exposure to sunlight is greatest (ie photosensitivity). Though blisters are the most common skin manifestations of PCT, other skin manifestations like hyperpigmentation and hypertrichosis (mainly on top of the cheeks) also occur.

The most common photocutaneous manifestations of porphyria cutanea tarda are due to increased mechanical fragility after sunlight exposure; erosions and blisters form painful indolent sores that heal with milia (cysts), dyspigmentation, and scarring. The deficient enzyme in porphyria cutanea tarda is uroporphyrinogen decarboxylase.



Porphyria Cutanea Tarda



[ Q: 2043 ] MRCPass - 2010  
September

A 47 year old male presented to hospital with a five day history of jaundice, fever, poor appetite and rigors. He has recently been treated for an infection and had been on a course of antibiotics.

On examination, he was jaundiced. His blood pressure was 130/70, pulse rate was 80 beats per minute, heart sounds were normal. There was no evidence of organomegaly or tenderness on abdominal examination.

Bloods showed:

albumin 30 g/L

alkaline phosphatase 1866 U/L

gamma glutamyl transferase of 336 U/L

alanine transaminase 138 U/L

bilirubin 80 umol/L.

*Which drug was likely to have been given?*

- 1- Cefotaxime
- 2- Paracetamol
- 3- Amoxicillin
- 4- Flucloxacillin
- 5- Tramadol

#### Answer & Comments

Answer: 4- Flucloxacillin

Augmentin (Co-amoxiclav), flucloxacillin, cefotaxime and tetracyclines can cause cholestatic jaundice.

Amoxicillin on its own can also cause cholestatic jaundice but less commonly so than flucloxacillin.



[ Q: 2044 ] MRCPass - 2010  
September

A 35 year old woman has pleuritic chest pains. *If she had pericarditis, on her ECG, the ST-segment is:*

- 1- Concave upwards
- 2- Convex upwards
- 3- Concave downwards
- 4- Convex downwards
- 5- Straight

#### Answer & Comments

Answer: 1- Concave upwards

The shape of the ST elevation is typically described as concave upwards in acute pericarditis.

In myocardial infarction, the ST elevation is described as convex upwards.

<http://www.aafp.org/afp/980215ap/marinell.html>



[ Q: 2045 ] MRCPass - 2010  
September

A 75 year old woman was referred with a two-month history of generalised weakness, fever, and weight loss.

There was no other relevant past medical history. There was no palpable splenomegaly. The Hb was 9.5 g/dl,

white cell count  $5.3 \times 10^9/l$ , MCV 112 fl and platelet count was  $89 \times 10^9/l$ . The reticulocyte count was <0.0001%.

There was anisocytosis and poikilocytosis was seen in the blood film.

*What is the likely diagnosis?*

- 1- Aplastic anaemia
- 2- Parvovirus infection
- 3- Myelodysplasia
- 4- Multiple myeloma
- 5- Waldenstrom's macroglobulinaemia

#### Answer & Comments

Answer: 3- Myelodysplasia

The myelodysplastic syndromes (MDS, formerly known as "preleukemia") are a diverse collection of hematological medical conditions that involve ineffective production of the myeloid cell lines.

The median age at diagnosis of a MDS is between 60 and 75 years.

There is often pancytopenia as seen in this case. A high MCV is common and a blood film often shows poikilocytosis (which is in itself non specific).

In this question, the answer is not aplastic anaemia as the MCV is high.



[ Q: 2046 ] MRCPass - 2010  
September

A 50 year old lady with chronic loin pains was organised to have a intravenous urogram. This revealed staghorn calculi. She had two episodes of urinary tract infection in the last 3 years with Proteus identified in the urine culture.

*What is the predominant composition of these calculi?*

- 1- Uric acid
- 2- Manganese
- 3- Magnesium ammonium phosphate
- 4- Cystine
- 5- Calcium oxalate

#### Answer & Comments

Answer: 3- Magnesium ammonium phosphate

Upper urinary tract stones that involve the renal pelvis and extend into at least 2 calyces are classified as staghorn calculi.

Although all types of urinary stones can potentially form staghorn calculi, approximately 75% are composed of a struvite-carbonate-apatite matrix. Struvite (ammonium magnesium phosphate) is a phosphate mineral with formula:

$((\text{NH}_4)\text{MgPO}_4 \cdot 6\text{H}_2\text{O})$ . Struvite stones are caused by bacterial infection that hydrolyzes urea to ammonium and raises urine pH to neutral or alkaline values. Urea-splitting organisms include Proteus, Pseudomonas, Klebsiella, Staphylococcus, and Mycoplasma.



[ Q: 2047 ] MRCPass - 2010  
September

A 65 year old man presents with shortness of breath. He has a history of COPD and has home oxygen and nebulisers. The ambulance crew reported that they had given him high flow oxygen and he is currently on 60% oxygen. On examination, he is short of breath but is able to have a conversation at present. He has a respiratory rate of 20 and wheezing throughout the lung. His arterial blood gases on examination are:

- pH 7.15 (7.36-7.44)  
pO<sub>2</sub> 15 (11.0-13.5) kPa  
pCO<sub>2</sub> 10 (3-6.0) kPa  
HCO<sub>3</sub> 28 (22-28)  
BE -7 (-1 to 1)

*What should be done?*

- 1- Reduce to 24% oxygen
- 2- Continue at 60% oxygen
- 3- Intravenous theophylline
- 4- Non invasive ventilation
- 5- Intubation and ventilation

#### Answer & Comments

Answer: 1- Reduce to 24% oxygen

This COPD patient has had too much oxygen and is starting to CO<sub>2</sub> retain, causing a respiratory acidosis.

The correct action is to reduce to 24% oxygen in the first instance and initiate therapy for COPD exacerbation, including steroids and nebulisers. If he does not improve or continues to worsen, then non invasive

ventilation (BIPAP) or intubation should be considered.



[ Q: 2048 ] MRCPass - 2010  
September

A 26-year-old presents a three month history of amenorrhea. She had no other symptoms but takes medication for contraception. Her BMI is 23 and blood pressure is 120 / 80 mmHg. Examination reveals slight galactorrhoea expression from both breasts but otherwise normal. Blood tests revealed a result for Prolactin 890 mU/L (< 450).

An MRI Scan was organised and this showed a microprolactinoma with a 7 mm diameter.

*Which one of the following hormones is likely to be deficient?*

- 1- Oestrogen
- 2- Growth hormone
- 3- Antidiuretic hormone
- 4- Thyroid hormone
- 5- Cortisol

#### Answer & Comments

Answer: 1- Oestrogen

Prolactinomas are the most common hormone-secreting pituitary tumors.

Based on size, a prolactinoma can be classified as a microprolactinoma (<10 mm diameter) or macroprolactinoma (>10 mm diameter). Prolactin inhibits gonadotrophin secretion. The major effect of increased prolactin is a decrease in levels of sex hormones - estrogen in women and testosterone in men. Symptoms due to a Prolactinoma include amenorrhea, galactorrhea, loss of axillary and pubic hair, hypogonadism and gynecomastia(in males).



[ Q: 2049 ] MRCPass - 2010  
September

A 70 year old man presents with left sided facial drop and left hemiparesis. A CT scan showed that he had a right middle cerebral artery infarct and he was commenced on dipyridamole.

*What is dipyridamole's mechanism of action?*

- 1- Phosphodiesterase inhibitor
- 2- Cyclooxygenase inhibitor
- 3- Glycoprotein IIb/IIIa inhibitor
- 4- ADP antagonist
- 5- Low molecular weight heparin

#### Answer & Comments

Answer: 1- Phosphodiesterase inhibitor

The action of dipyridamole is on platelets.

Inhibition of phosphodiesterase by dipyridamole elevates platelet cAMP levels by inhibiting its breakdown. The high cAMP levels lead to a reduction in intracellular Ca<sup>2+</sup> and this inhibits events leading to platelet activation and granule excretion.



[ Q: 2050 ] MRCPass - 2010  
September

A 36 year old man has injured his leg whilst playing football.

*Which one of the following is consistent with a common peroneal nerve injury due to fibula neck injury?*

- 1- Loss of ankle jerk
- 2- loss of sensation over the lateral part of the leg
- 3- Loss of dorsiflexion
- 4- Loss of sensation to the medial part of the thigh
- 5- Loss of inversion

## Answer &amp; Comments

**Answer:** 3- Loss of dorsiflexion

There is foot drop, loss of dorsiflexion and eversion of the foot in common peroneal nerve injury.

Inversion and plantar flexion are normal. There is usually sensory loss over the lower lateral part of the leg and dorsum of the foot.



[ Q: 2051 ] MRCPass - 2010  
September

A 40 year old man is seeking advice. He has adult polycystic kidney disease and has a young son. He wants to know what is the chance that his son has the disease.

*In what percentage is the son likely to be affected?*

- 1- 0%
- 2- 25%
- 3- 50%
- 4- 75%
- 5- 100%

## Answer &amp; Comments

**Answer:** 3- 50%

The patient has autosomal dominant polycystic kidney disease.

This means he is likely to have one gene affected and one unaffected. The likelihood of the son inheriting one of these genes is 50%.



[ Q: 2052 ] MRCPass - 2010  
September

A 60 year old man has been complaining of breathlessness. He is a long standing smoker of 25 cigarettes a day.

On examination, he has a plethoric facies. Cardiovascular examination is normal and the breath sounds are clear.

There is no organomegaly in the abdomen. A chest X ray shows hyperinflated lungs. Blood results show : Hb 18.5 g/dl, WCC  $14 \times 10^9/l$ , platelets  $350 \times 10^9/l$ . Haematocrit is 55% (<48%).

*What is the likely cause of this picture?*

- 1- Primary polycythemia
- 2- Secondary polycythemia due to smoking
- 3- Polycythemia rubra vera
- 4- Methaemoglobinaemia
- 5- Congenital heart disease

## Answer &amp; Comments

**Answer:** 2- Secondary polycythemia due to smoking

This patient is a heavy smoker and probably has COPD.

Polycythaemia can be due to smoking can cause plethora and a clinical picture as described above.

There is no splenomegaly, which suggest that polycythaemia rubra vera is unlikely. The haematocrit (proportion of red cell mass to plasma volume) is elevated in both primary and secondary polycythaemias.



[ Q: 2053 ] MRCPass - 2010  
September

A 42 year old type I diabetic is referred for renal investigations. She has been suffering from Rheumatoid arthritis for the last 20 years. She is currently on insulin injections, ibuprofen and penicillamine. She had proteinuria on a urine dipstick and quantification with 24 hour urine collection revealed that she had urinary protein > 4.5 g/day.

Ultrasound of the abdomen shows increased renal echogenicity. Investigations show :

Hb 11.5 g/dl

MCV 82 fl



WCC  $12 \times 10^9/l$

platelets  $225 \times 10^9/l$

sodium 135 mmol/l

potassium 4.5 mmol/l

Urea 14 mmol/l

Creat 215 umol/l

A renal biopsy shows eosinophilic deposits within the mesangium on light microscopy. The basement membrane and epithelial space is normal.

*What is the probable diagnosis?*

- 1- Minimal change nephropathy
- 2- Membranous nephropathy
- 3- Diabetic nephropathy
- 4- NSAIDS induced nephropathy
- 5- Amyloidosis

#### Answer & Comments

Answer: 5- Amyloidosis

Diabetic nephropathy is unlikely to cause such heavy proteinuria, hence amyloidosis due to rheumatoid arthritis is the most likely diagnosis.

Amyloidosis is a clinical disorder caused by extracellular and or intracellular deposition of insoluble abnormal amyloid fibrils that alter the normal function of tissues. AA amyloidosis can be caused by rheumatoid arthritis. Up to 5% of patients with long-standing RA can develop systemic amyloidosis that usually presents as nephrotic syndrome. The biopsy shows eosinophilic deposits in the mesangium and capillary walls, which can be stained pink with Congo Red.

Membranous nephropathy can present similarly, but is more commonly associated with autoimmune diseases (e.g. SLE), infections (e.g. hepatitis B) and malignancy (e.g. lymphoma). The drugs for rheumatoid arthritis ie NSAIDS, penicillamine gold can cause membranous nephropathy. The renal

biopsy will show small subepithelial deposits in the glomeruli which can also lead to spikes or thickening of the basement membrane but the mesangium is typically normal.

This case is also unlikely to be minimal change disease - (age of onset usually younger), the histology shows in minimal change shows a normal glomerulus and fusion of epithelial foot process will be seen only on electron microscopy.



[ Q: 2054 ] MRCPass - 2010  
September

A 23 year old man has been bitten by a dog on the thigh whilst walking in a park. 2 days later he develops erythema around the site and a purulent wound.

*What is best antibiotic?*

- 1- Trimethoprim
- 2- Metronidazole
- 3- Flucloxacillin
- 4- Ciprofloxacin
- 5- Augmentin

#### Answer & Comments

Answer: 5- Augmentin

Pasteurella (canis or multocoda) species are the most frequent isolates from both dog bites.

Other common aerobes included streptococci, staphylococci, moraxella, and neisseria. Augmentin is the recommended antibiotic, along with tetanus injection for prophylaxis. If there is evidence of cellulites as in this case, then fluclox and benpen should be prescribed.



[ Q: 2055 ] MRCPass - 2010  
September

A 20-year-old lady with polycystic ovary syndrome was prescribed Metformin.

How does Metformin acts in this situation?

- 1- Increasing oestradiol levels
- 2- Increasing luteinising hormone levels
- 3- Increasing gluconeogenesis
- 4- Increasing insulin levels
- 5- Increasing peripheral glucose uptake

#### Answer & Comments

**Answer:** 5- Increasing peripheral glucose uptake

Metformin is being used increasingly in polycystic ovary syndrome (PCOS) and non-alcoholic steatohepatitis, two diseases that feature insulin resistance.

Metformin improves insulin sensitivity by increasing peripheral glucose uptake and utilization. The reduction of hormonal imbalance and treatment of insulin resistance helps to restore the ovulatory cycles and fertility in PCOS.



[ Q: 2056 ] MRCPass - 2010  
September

A 75 year old lady presents with visual problems and poor coordination. She mentions that over the last two days, she experienced a mild headache and visual blurring. She found it difficult to dress herself. There is a history of hypertension and type 2 diabetes. On examination, she has left homonymous hemianopia. Tone and power were normal, but she had a left sided loss of sensation to the upper and lower limbs.

*What is the likely site of lesion?*

- 1- Posterior cerebral artery
- 2- Posterior inferior cerebellar artery
- 3- Inferior cerebral artery
- 4- Middle cerebral artery
- 5- Anterior cerebral artery

#### Answer & Comments

**Answer:** 1- Posterior cerebral artery

The better answer is posterior cerebral artery, as it the distribution affected by a stroke can cause homonymous hemianopia, hemisensory loss and also parietal lobe signs such as apraxia.

In a middle cerebral artery lesion more significant signs such as motor weakness would be expected.



[ Q: 2057 ] MRCPass - 2010  
September

A 57-year-old man with a history of hypertension, diabetes, bipolar disorder and chronic obstructive pulmonary disease.

He has bloods taken in clinic with the following results:

sodium 119 mmol/l

potassium 3.8 mmol/l

Bicarbonate 26 mmol/l

Urea 3.7 mmol/l

Creatinine 92 µmol/l

Plasma osmolality 270 mosmol/l (275-290)

Urine osmolality 400 mosmol/l (350-1000)

*Which one of the following medications is most likely to be responsible?*

- 1- Metformin
- 2- Lithium
- 3- Carbamazepine
- 4- Carbimazole
- 5- Pioglitazone

#### Answer & Comments

**Answer:** 3- Carbamazepine

This patient has hyponatraemia which is most likely to be due to drug induced SIADH causes.

The reason the diagnosis is SIADH, is because the urine osmolality is inappropriately high

due to excess ADH causing concentrated urine, despite hyponatraemia. An easy way to remember certain drugs causing SIADH are those starting with C:

- carbamazepine
- chlorpromazine
- chlorpropamide
- cyclophosphamide



[ Q: 2058 ] MRCPass - 2010  
September

A 30 year old lady is 32 weeks pregnant. This is her second pregnancy, the first pregnancy was uneventful. She has pruritus and on examination, was mildly jaundiced. Liver function tests showed:

ALT 75 (5-35) U/l

AST 70 (1-31) U/l

ALP 350 (20-120) U/l

Bilirubin 70 (1-22)  $\mu\text{mol/l}$

Albumin 38 (37-49) g/l

Gamma glutamyl transpeptidase 120 (<50) U/L

*What is the likely diagnosis?*

- 1- Primary biliary cirrhosis
- 2- Gallstones
- 3- Cholangiocarcinoma
- 4- Intrahepatic cholestasis of pregnancy
- 5- Viral hepatitis

#### Answer & Comments

Answer: 4- Intrahepatic cholestasis of pregnancy

Intrahepatic cholestasis of pregnancy usually presents during the third trimester, at a mean of 30 weeks of gestation.

The characteristic symptom is itching (pruritus gravidarum), which involves the trunk,

extremities, palms, and soles. The itching may be severe, and it is often worse at night. Jaundice develops in 20 to 60 percent of women one to four weeks after the onset of itching. The features of obstructive jaundice, including pale stools and dark urine, may be present, but patients do not have constitutional symptoms. Intrahepatic cholestasis is associated with an increased risk of prematurity and stillbirth. Women with intrahepatic cholestasis should be treated at centers capable of caring for premature infants. Cholestyramine, given in divided doses totalling 10 to 12 g per day, may help relieve pruritus.



[ Q: 2059 ] MRCPass - 2010  
September

A 25 year old man person attacks his girlfriend and shows no remorse. His friend says that of late he has become very aggressive. His girlfriend says that he hasn't slept for 2 days. On examination he is aggressive and is pacing around a lot. He says he cannot be punished as he has contacts with high level police officials.

*What is the diagnosis?*

- 1- Paranoid schizophrenia
- 2- Mania
- 3- Psychotic depression
- 4- Conversion disorder
- 5- Anxiety disorder

#### Answer & Comments

Answer: 2- Mania

This man demonstrates increased levels of activity, aggressiveness and restlessness consistent with mania.

He also has abnormal unrealistic beliefs but not psychotic features such as delusions or hallucinations.



[ Q: 2060 ] MRCPass - 2010  
September

A 55-year-old man with a history of epilepsy is seen in the neurology clinic. Over the last few months, he has experienced a 'numbness' of his hands and feet. On examination he has reduced sensation in a glove-and-stocking distribution associated with a reduced ankle reflex. On examination, he has lymphadenopathy in the cervical and inguinal region and some bleeding around the gums.

*Which one of the following medications is he most likely to have been taking?*

- 1- Carbamazepine
- 2- Phenytoin
- 3- Topiramate
- 4- Sodium valproate
- 5- Lamotrigine

#### Answer & Comments

Answer: 2- Phenytoin

Phenytoin side effects include gingival hypertrophy, megaloblastic anaemia, lymphadenopathy and peripheral neuropathy.



[ Q: 2061 ] MRCPass - 2010  
September

A 65 year old man presents with a three month history of fever, malaise, anorexia, twenty-five pound weight loss, diffuse myalgias and night sweats, and more recently hemoptysis.

He had a past medical history of hypertension, and described episodes of haematuria. Physical examination showed that he had diffuse lower extremity muscle tenderness, crepitations in the lungs and a rash on the trunks. Chest x-ray showed bilateral diffuse pulmonary infiltrates and also 2 areas of cavitation.

Investigations showed:

urine protein 1+

urine sediment - many red blood cell and granular casts

sodium 135 mmol/l

potassium 5.2 mmol/l

urea 14 mmol/l

creatinine 220 µmol/l

*What investigation should be organised next?*

- 1- Urine culture
- 2- Anti neutrophil cytoplasmic antibody
- 3- Renal biopsy
- 4- CT of kidney, ureter, bladder
- 5- MR angiogram of the kidneys

#### Answer & Comments

Answer: 2- Anti neutrophil cytoplasmic antibody

The diagnosis fits a pulmonary renal syndrome such as Wegener's, Churg Strauss or Goodpasture's syndrome.

Apart from renal failure, there may be pulmonary haemorrhage, haemoptysis, infiltrates on the CXR as well as cavitation.

The least invasive method initially to confirm a vasculitis is to request an ANCA.



[ Q: 2062 ] MRCPass - 2010  
September

A trial assessed a statin tablet compared to placebo for stroke prevention over 1 year. There were 10% of patients developing stroke in the group taking a tablet and 20% in the carotid endarterectomy group developing a stroke over the 1 year.

*What is the number needed to treat over 1 year to prevent 1 death?*

- 1- 1
- 2- 10
- 3- 20
- 4- 100

5- 1000

## Answer &amp; Comments

Answer: 2- 10

NNT is defined as number needed to treat to prevent 1 death.

The way to work this out is 1 divided by absolute risk reduction (Experimental event rate - control event rate). Hence  $1 / (ARR)$  is  $1 / 10\%$  which is 10.



[ Q: 2063 ] MRCPass - 2010  
September

A 60 year old man with no previous symptoms had a routine ECG. The ECG shows left bundle branch block. The patient is currently taking Aspirin 75 mg od. He has a family history of myocardial infarction. He smokes 20 cigarettes a day. The GP is concerned and refers the patient for further investigation. On examination, BP is 120/70 mmHg and there are no findings during cardiovascular exam.

*Which of the following investigations is indicated?*

- 1- Exercise ECG
- 2- CT of coronary arteries
- 3- Myocardial perfusion imaging
- 4- Coronary angiography
- 5- Cardiac MRI

## Answer &amp; Comments

Answer: 3- Myocardial perfusion imaging

For a patient with moderate likelihood of coronary artery disease (this patient is not symptomatic so is not in the high risk category), non invasive testing such as Exercise tolerance tests or myocardial perfusion tests should be performed.

An exercise test will be difficult to interpret due to the ECG changes of LBBB. Thus its most

appropriate to conduct a myocardial perfusion scan.



[ Q: 2064 ] MRCPass - 2010  
September

A 50 year old lady is being reviewed in the diabetes clinic. She has type 2 diabetes which is poorly controlled and a history of CCF with moderately impaired left ventricular function. Her BMI is 35. She is currently on gliclazide

160mg bd, a long acting glargine insulin and short acting actrapid insulin with meals, frusemide, amlodipine and bendrofluazide. Her HbA1c value is 12 and she has frequently high BMS recorded. Her latest U&E results are urea 10 mmol/l, creatinine 190 µmol/l.

*What is the best medication to add to control her blood sugars?*

- 1- Rosiglitazone
- 2- Metformin
- 3- Exanetide
- 4- Glimepiride
- 5- Glucagon

## Answer &amp; Comments

Answer: 3- Exanetide

The newer incretin (GLP) analogues such as exanetide and liraglutide are now included in the guidelines by NICE CG 66 for patients who have not responded to insulin and Thiazolidinediones.

In this patient, rosiglitazone is contraindicated due to heart failure and metformin is relatively contraindicated due to renal impairment. The BMI is high and as a second line agent after sulphonylurea and insulin, exanetide should be considered.



[ Q: 2065 ] MRCPass - 2010  
September

A 45 year old man is investigated for

hypertension. Despite being on 3 different drugs, his blood pressure is consistently above 180/100 mmHg. Blood results show :

PH 7.5

PO<sub>2</sub> -13 kPa

PCO<sub>2</sub> - 4 kPa

bicarbonate 32 (20-28) mmol/l

sodium 138 mmol/l

potassium 2.7 mmol/l

urea 6 µmol/l

creatinine 100 µmol/l

*What investigation should be requested?*

1- 24 hour urine catecholamines

2- 24 hour urine HIAA

3- Renin aldosterone ratio

4- MRI of the adrenal glands

5- Selective venous sampling

#### Answer & Comments

Answer: 3- Renin aldosterone ratio

Hypokalaemic alkalosis with refractory hypertension as in this case suggests primary hyperaldosteronism (Conn's syndrome).

Secondary hyperaldosteronism would also be possible but tends to cause hypertension which is easier to control. As Conn's is caused by high aldosterone due to an aldosterone secreting tumour, the high aldosterone enhances exchange of sodium for potassium in the kidney so there is hypernatremia and hypokalemia.

The sodium retention leads to plasma volume expansion and elevated blood pressure. The increased blood pressure will lead to increased glomerular filtration rate and cause a decrease in renin release from the granular cells of the juxtaglomerular apparatus in the kidney. Usually, renin levels are suppressed, leading to a very low renin-aldosterone ratio (<0.0005).



[ Q: 2066 ] MRCPass - 2010  
September

A clinical trial studied patients' outcomes before and after they were given an antihypertensive drug.

*Which one of these factors would invalidate the use of a paired t test?*

1- Not being in normal distribution

2- Small sample size

3- An underpowered study

4- Study bias

5- Loss to follow up

#### Answer & Comments

Answer: 1- Not being in normal distribution

The students t test can be used to compare two groups of data (paired T test being an example) with parametric data.

Parametric means that the data will be of normal distribution and parallels the normal or bell curve). In this case if the data was not of normal distribution, t tests cannot be used and a non parametric test such as Kruskal Wallis or Wilcoxon test should be used instead.



[ Q: 2067 ] MRCPass - 2010  
September

A 41-year-old female patient, an ex-smoker with an 8-pack-year smoking history and severe pulmonary emphysema of early onset, received a diagnosis of 1-antitrypsin (AAT) deficiency. Regarding alpha 1 antitrypsin phenotypes, *which of the following is most strongly associated with emphysema?*

1- ZZ

2- MZ

3- SZ

4- MM

5- SS



## Answer &amp; Comments

Answer: 1- ZZ

The commonest phenotype is Protease Inhibitor (Pi)MM (90% of the population have this).

These individuals produce normal amounts of alpha1-antiprotease. The most common form of alpha 1 antitrypsin deficiency is associated with allele Z, or homozygous PiZ (ZZ). Serum levels of AAT in these patients are about 3 - 7 umol/L (10-15% of normal serum levels). Emphysema develops in most (but not all) individuals with serum levels less than 9 mmol/L.

PiMM: 100% (normal)

PiMS: 80% of normal serum level of A1AT

PiSS: 60% of normal serum level of A1AT

PiMZ: 60% of normal serum level of A1AT

PiSZ: 40% of normal serum level of A1AT

PiZZ: 10-15% (severe alpha 1-antitrypsin deficiency)



[ Q: 2068 ] MRCPass - 2010  
September

A 70-year-old female presented with sudden onset loss of vision in the left eye. Her past medical history includes hypertension, diabetes, polymyalgia and hypothyroidism. She had a headache on the left. On examination, she had temporal artery tenderness on the left. The patient's erythrocyte sedimentation rate (ESR) was 120 and her blood pressure is 150/90 mmHg. Fundoscopy revealed optic disc oedema with splinter haemorrhages around the optic disc on the left.

*What is the most likely cause of her visual loss?*

- 1- Hypertensive retinopathy
- 2- Anterior ischaemic optic neuropathy

- 3- Central retinal artery thrombosis
- 4- Central retinal vein thrombosis
- 5- Diabetic retinopathy

## Answer &amp; Comments

Answer: 2- Anterior ischaemic optic neuropathy

The diagnosis is Temporal arteritis (Giant Cell Arteritis).

Around 50% of patients with GCA eventually experience visual symptoms (eg, transient visual blurring, diplopia, eye pain, sudden vision loss). Transient repeated episodes of blurred vision are usually reversible, but sudden loss of vision is an ominous sign and is almost always permanent. The most common cause of vision loss is anterior ischemic optic neuropathy (AION). This results from ischemia of the optic nerve head, supplied mainly by the posterior ciliary arteries. Examination of the fundus may reveal optic disc edema, with or without splinter hemorrhages along the disc margin.



[ Q: 2069 ] MRCPass - 2010  
September

*What is the likely physiological action of Gastrin?*

- 1- Luminal peptides stimulates its release in the gastric antrum
- 2- Somatostatin stimulates its release in the gastric antrum
- 3- Acts on G cells in antrum
- 4- reduces pancreatic bicarb secretion
- 5- Reduces gastric blood flow

## Answer &amp; Comments

Answer: 1- Luminal peptides stimulates its release in the gastric antrum

In humans, gastrin is a hormone that stimulates secretion of gastric acid by parietal cells in the stomach.

It is released by G cells in the stomach antrum and duodenum (it doesn't act on G cells).

Gastrin release is stimulated by:

- stomach distension
- vagal stimulation
- the presence of partially digested proteins especially amino acids

Gastrin release is inhibited by:

- Increased acidity
- Somatostatin



[ Q: 2070 ] MRCPass - 2010  
September

A 28 year old female took 40 tablets of Paracetamol and was admitted to hospital. She is seen the following day and needs assessment of her medical condition.

*Which of the following is the best investigation to assess prognosis after 26 hours for a paracetamol overdose?*

- 1- Prothrombin time
- 2- AST
- 3- Paracetamol level
- 4- Urea and creatinine
- 5- Bilirubin

#### Answer & Comments

Answer: 1- Prothrombin time

Although all of the tests may be abnormal, the INR / prothrombin time measurement is the most important in predicting prognosis (part of the child pugh criteria for liver failure) after a paracetamol overdose.



[ Q: 2071 ] MRCPass - 2010  
September

A 55-year-old man presented with a 10 -year history of an intermittent rash and pruritus associated with sweating from exertion.

For 2 years he had noted pruritus and erythema mainly in the hands and feet, occurring on exposure to cool weather and resolving promptly on warming. He has a past medical history of Investigations showed a normal full blood count and mildly deranged liver function tests. Cryoglobulin levels were elevated.

*Which one of the following is likely to be positive?*

- 1- Rheumatoid factor
- 2- Antinuclear antibody
- 3- Anti neutrophil cytoplasmic antibody
- 4- Anti centromere antibody
- 5- Anti Ro and La antibody

#### Answer & Comments

Answer: 1- Rheumatoid factor

Cryoglobulinaemia occurs when there are large amount of proteins that become insoluble at reduced temperatures.

Type I is most commonly encountered in patients with multiple myeloma. Types II and III are strongly associated with infection by the hepatitis C virus.

Types II and III have Rheumatoid Factor activity and bind to polyclonal immunoglobulins.

Cryoglobulins may also be present in mycoplasma pneumonia, leukemias, primary macroglobulinemia, and some autoimmune diseases, such as systemic lupus erythematosus and rheumatoid arthritis.



[ Q: 2072 ] MRCPass - 2010  
September

A 30-year-old man presents with severe abdominal pains. His blood tests and abdominal examination were normal.

He had recently had an ultrasound of the abdomen which did not identify any pathology. It was noticed that he had multiple scars on his upper limb. He also kept asking for opiate drugs for pain relief.

*What is the likely diagnosis?*

- 1- Malingering
- 2- Hypochondriasis
- 3- Factitious disorder
- 4- Somatisation disorder
- 5- Conversion disorder

#### Answer & Comments

Answer: 1- Malingering

The different common psychiatric diagnoses are below .

In this case it seems that the patient is malingering in order to obtain narcotic drugs (evidence of intravenous injection marks on the limbs).

Munchausen syndrome (factitious disorder): the patient seeks medical attention by the deliberate production or feigning of symptoms. The motivation for seeking attention is not known.

Hypochondriasis: (somatoform disorder) the patient is convinced that they have a life-threatening illness, despite evidence to the contrary. The core feature of hypochondriasis is not preoccupation with symptoms themselves, but rather the fear or idea of having a serious disease. The fear or idea is based on the misinterpretation of bodily signs and sensations as evidence of disease.

Somatisation disorder:(somatoform disorder)  
With this a patient presents with multiple,

medically unexplained symptoms. The patient's life or work are frequently affected, although they also might be unconcerned about the nature of their symptoms (thus appearing calm). It is not a deliberate feigning of symptoms.

Conversion disorder : (somatoform disorder) This is a condition where a patient displays neurological symptoms e.g. paralysis, even though no neurological explanation is found and it is determined that the symptoms are due to the patient's psychological response to stress. Malingering: the patient knowingly fabricates a medical illness for known gain.



[ Q: 2073 ] MRCPass - 2010  
September

A 50 year old lady with fever, fatigue and anaemia has been diagnosed as having acute myeloid leukaemia. On examination, she is pale and has mild splenomegaly.

*Which one of the following is the strongest determinant of prognosis?*

- 1- White cell count
- 2- Number of blast cells with bone marrow
- 3- Morphology of cells
- 4- Size of spleen
- 5- Karyotype

#### Answer & Comments

Answer: 5- Karyotype

Acute myeloid leukemia (AML), also known as acute myelogenous leukemia, is the most common acute leukemia affecting adults.

Anaemia, fever, weight loss, bleeding (thrombocytopenia) and also infections can be presenting symptoms. According to the widely used WHO criteria, the diagnosis of AML is established by demonstrating involvement of more than 20% of the blood and/or bone

marrow by leukemic myeloblasts. There are 8 subtypes.

Patients with AML can have high, normal, or low WBC counts.

The single most important prognostic factor in AML is cytogenetics, or the chromosomal structure of the leukemic cell. Cytogenetic karyotypes e.g. t(15;17), t(8;21) and inv/del/t(16) are associated with good prognosis. Because acute promyelocytic leukemia (APL) has the highest curability and requires a unique form of treatment, it is important to quickly establish the diagnosis, particularly the t(15;17) translocation.

A number of other cytogenetic abnormalities are known to associate with a poor prognosis: 5, -7, del(5q), Abnormal 3q, Complex cytogenetics.

Age >60 years and elevated lactate dehydrogenase level are also associated with poorer outcomes in AML



[ Q: 2074 ] MRCPass - 2010  
September

A 37-year-old patient presents with a painless skin lesion on his left finger, first observed 5 days before admission. On examination, a purulent looking pustule of 1 cm diameter was seen. The patient reported that he was working on a sheep farm.

*What is the diagnosis?*

- 1- Staphylococcal furuncle
- 2- Cutaneous anthrax
- 3- Chickenpox
- 4- Leprosy
- 5- Orf

#### Answer & Comments

Answer: 5- Orf

Orf is an exanthemous disease caused by a parapox virus and it also known as Ecthyma

contagiosum.

It is a zoonosis usually transmitted to humans from affected sheep or goat through direct contact or contaminated fomites. There are typically no systemic symptoms.

The papule may persist for 7 to 10 weeks and spontaneously resolves. Whilst treatment is mainly conservative, some cases have improved with topical antiviral agents.



ORF



[ Q: 2075 ] MRCPass - 2010  
September

A 35 year old turkish woman presents with a 2 month history of intermittent fevers associated with cutaneous pallor, weight loss, vomiting and anorexia. Physical examination revealed an enlarged liver (4.5 cm from the right costal margin) with smooth borders, a soft palpable spleen (6 cm from the left costal margin). The following results were obtained:

Hb 7.5 g/dl

MCV 75 fl

WCC  $3 \times 10^9/l$

platelets  $54 \times 10^9/l$

sodium 135 mmol/l

potassium 4.5 mmol/l

urea 5 mmol/l

creatinine 85 mmol/l

*What is the likely diagnosis?*

- 1- Malaria
- 2- Non Hodgkin's lymphoma

- 3- Tuberculosis
- 4- Visceral leishmaniasis
- 5- Schistosomiasis

#### Answer & Comments

Answer: 4- Visceral leishmaniasis

There are several forms of leishmaniasis, cutaneous and visceral are commonly quoted.

In this case, fever and hepatosplenomegaly would be consistent with visceral leishmaniasis. Bone marrow infiltration may cause anemia, thrombocytopenia, and leukopenia. The gold standard for diagnosis is visualisation of the amastigotes in the bone marrow aspirate. Leishmania donovani can be spread by the sandfly. The traditional treatment is with pentavalent antimonials such as sodium stibogluconate (many resistant cases in India), but increasingly amphotericin B is the preferred treatment in depending on geography.



## [ Q: 2076 ] MRCPass - 2011 January

A 55-year-old man, known to have hepatitis C, was admitted with lethargy and diffuse petechial rash of the lower extremities. The rash had been present for the previous 2 months, starting as a macular rash in both lower extremities and progressing to involve the trunk and upper extremities. The following investigation results were obtained:

Urinalysis showed microscopic hematuria with 3-6 coarse granular casts, and proteinuria +++.

Hb 8.5 g/dl

MCV 85 fl

WCC  $8 \times 10^9/l$

platelets  $170 \times 10^9/l$

sodium 135 mmol/l

potassium 4.5 mmol/l

urea 24 mmol/l

creatinine 355  $\mu\text{mol/l}$

C3 = 52 mg/dL (79-152)

C4 = 3.5 mg/dL (16-38)

Rheumatoid factor was 150 IU/mL (normal: 0-20)

*What is the diagnosis?*

- 1- Haemolytic uraemic syndrome
- 2- Crescentic glomerulonephritis
- 3- Autoimmune haemolytic anaemia
- 4- Henoch Schönlein purpura
- 5- Cryoglobulinemia

## Answer &amp; Comments

Answer: 5- Cryoglobulinemia

Cryoglobulins are serum proteins that precipitate in the cold.

It is classified into three types (I, II and III), type II and III usually associated with hepatitis C virus (HCV) infection. In chronic HCV infection, cryoglobulins are found in 80% of patients of whom 10% develop

cryoglobulinemic vasculitis. The clinical manifestations are as described in this scenario, with cutaneous vasculitis (skin lesions are usually palpable purpura of the lower extremities) and renal impairment (cryoglobulin deposits in the renal glomeruli leading to proteinuria) in the form of glomerulonephritis.



## [ Q: 2077 ] MRCPass - 2011 January

A 31 year old man with a 15 year history of type 1 diabetes presents with a 4 month history of pain and stiffness of the left shoulder. On examination, he has limited internal rotation and abduction of the shoulder.

*What is the likely diagnosis?*

- 1- Osteoarthritis
- 2- Rheumatoid arthritis
- 3- Brachial neuropathy
- 4- Adhesive capsulitis
- 5- Glenohumeral meniscal tear

## Answer &amp; Comments

Answer: 4- Adhesive capsulitis

The features of reduced internal rotation and abduction are typical of frozen shoulder / adhesive capsulitis.

In this condition, the connective tissue surrounding the glenohumeral joint of the shoulder, becomes inflamed and stiff leading to limited movement and pain. The movement of the shoulder is severely restricted and the pain is usually constant, worse at night. Treatment is with analgesia (NSAIDs) and physiotherapy. In more severe cases, steroid injections or surgery (capsular release) may be necessary.



## [ Q: 2078 ] MRCPass - 2011 January

A 53 year old man presented to the emergency department with a collapse. He



was found at home unwell by his wife. He had a past medical history of TIA, a type II diabetes, and depression. His medications were gliclazide and aspirin. On examination he was afebrile and his BM was 9.0. His GCS was 8 (E2, V3, M3). He had no neck stiffness. His pupils were pinpoint and there was a lack of horizontal gaze. He had bilateral upgoing plantar reflexes, increased tone throughout, and brisk reflexes.

*What is the diagnosis?*

- 1- Posterior inferior cerebellar stroke
- 2- Demyelination
- 3- Pontine haemorrhage
- 4- Middle cerebral artery lesion
- 5- Posterior communicating artery aneurysm

#### Answer & Comments

Answer: 3- Pontine haemorrhage

Large pontine haemorrhage lesions can Quadriplegia, coma, small reactive pupils and bilateral paralysis of horizontal conjugate gaze are typical sequelae.

There is often downward eye movements - ocular bobbing - imply preservation of rostral brainstem gaze centres.

Smaller unilateral basal pontine lesions can present with contralateral hemiparesis, often with ataxia in the limbs affected.



[ Q: 2079 ] MRCPass - 2011 January

A 30 year old man has had Hepatitis B testing. He mentioned that he previously had Hepatitis B immunisation.

*Which one of the following is likely to be positive indicating effective immunisation?*

- 1- Hep B s Antigen
- 2- Hep B c Antigen
- 3- Hep B e Antigen
- 4- Hep B s Antibody

5- Hep B c Antibody

#### Answer & Comments

Answer: 4- Hep B s Antibody

A chronic carrier has positive Hep B s Ag and positive HepB c Ab

A patient with previous immunization has Hep B s Ag negative and negative Hep B c Ab and positive HepBs Antibody. (note that the core antibody is non specific and not elevated post immunisation)

A patient with previous Hep B infection who is not a chronic carrier, has negative Hep B s Ag and positive HepBc

Antibody and positive HepBs Antibody (both antibodies are positive)



[ Q: 2080 ] MRCPass - 2011 January

A 57 year old man was admitted to another hospital with frequent bloody diarrhea (10-15 bow el motions/day), abdominal pain, and fever. On admission, physical examination showed a temperature of 37.5°C; the abdomen was soft, but there was moderate tenderness in the lower abdomen. Laboratory results showed mild anemia (haemoglobin, 11g/dl), albumin 32 (37-49) g/l, elevated C-reactive protein 57mg/dl. A colonoscopy was performed.

This showed aggregates of yellow -whitish, well defined plaque in the ascending colon to the caecum. There was uniform congestion, oedema and irregular shallow ulcers, crypt abscesses and depletion of goblet cells.

*What is the diagnosis?*

- 1- Celiac disease
- 2- Crohn's disease
- 3- Ulcerative colitis
- 4- Clostridium difficile colitis
- 5- Enteroviral colitis

## Answer &amp; Comments

**Answer:** 3- Ulcerative colitis

The history of bloody diarrhea is typical of ulcerative colitis.

The biopsy specimen showing uniform areas of inflammation rather than skip lesions, and also crypt abscesses (these are crypts infiltrated with leukocytes) are typical. Typically, ulcerative colitis involves only the mucosa, with the formation of crypt abscesses and a coexisting depletion of goblet cell mucin.



[ Q: 2081 ] MRCPass - 2011 January

A 36-year-old woman was evaluated in outpatients following a complaint of visual difficulties and an ophthalmologic evaluation showed bitemporal hemianopia. An urgent MRI scan was requested.

*Where is the likely lesion?*

- 1- Optic nerve
- 2- Optic chiasm
- 3- Optic radiation
- 4- Occipital lobe
- 5- Oculomotor nerve

## Answer &amp; Comments

**Answer:** 2- Optic chiasm

Bitemporal hemianopia is typically caused by an optic chiasm lesion.

Since the adjacent structure is the pituitary gland, some common tumors causing compression are pituitary adenomas and craniopharyngiomas. Another relatively common neoplastic etiology is meningiomas. In addition, an anterior communicating artery aneurysm which arises superior to the chiasm can enlarge, and compress it from above.



[ Q: 2082 ] MRCPass - 2011 January

A 25 year old man has presented with a primary pneumothorax for the first time. He smokes 5 cigarettes a day.

The pneumothorax was aspirated and has resolved when the CXR was repeated. He is seeking advice about further management.

*Which one of the following should he avoid?*

- 1- No restrictions
- 2- Travelling by plane for 3 months
- 3- Travelling by plane indefinitely
- 4- Diving for 3 months
- 5- Diving indefinitely

## Answer &amp; Comments

**Answer:** 5- Diving indefinitely

These guidance is within the British Thoracic society guidelines for pneumothorax.

Commercial airlines and BTS guidelines currently advise that there should be a 6 week interval between having a pneumothorax and travelling by air.

After a pneumothorax, diving should be discouraged permanently unless a very secure definitive prevention strategy such as surgical pleurectomy has been performed.



[ Q: 2083 ] MRCPass - 2011 January

A man presents to the hospital with severe vomiting and diarrhoea. On examination, he was dehydrated, and his face was flushed. He gives a history of drinking wine and eating tuna as a main course in a fish restaurant.

*What is the likely cause?*

- 1- Clostridium difficile toxin
- 2- Cholera toxin
- 3- Scrombrotoxin
- 4- Alfatoxin

## 5- Celiac disease

## Answer &amp; Comments

**Answer:** 3- Scrombrotoxin

Scombroid food poisoning is a foodborne illness that results from eating spoiled (decayed) fish.

Scrombrotoxin is produced by oily fish such as mackerel, tuna, mahi-mahi, bonito, sardines, anchovies. Unlike many types of food poisoning, this form is not brought about by ingestion of a bacterium or virus. Histidine exists naturally in many types of fish, and at temperatures above 16°C (60°F) on air contact it is converted to the biogenic amine histamine via the enzymes in the fish. The effects of histamine lead to nausea, diarrhoea and flushing. Symptoms usually last for 4 -6 hours.



[ Q: 2084 ] MRCPass - 2011 January

A 55-year-old female patient was referred to the emergency department with a one-week history of epigastric pain, poor food intake and pains radiating to her back, nausea and vomiting. She also complained of dark urine and jaundice, and her faeces become pale. The following blood results were obtained:

ALT: 127 U/L ( 5-40 U/L)

alkaline phosphatase: 1300 U/L ( 98-290 U/L)

Bilirubin 85 (1-22) µmol/l

serum amylase: 2100 U/L (<220U/L)

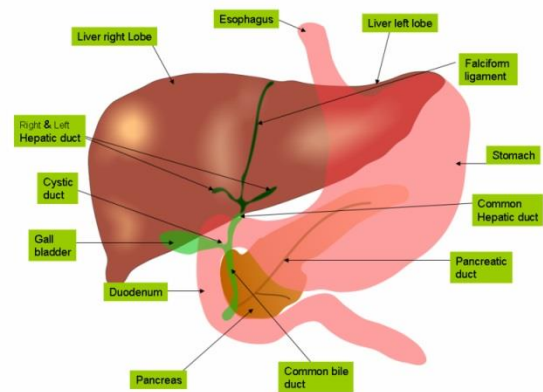
*Where is the likely site of obstruction leading to jaundice?*

- 1- Cystic duct Left hepatic duct
- 2- Common bile duct
- 3- Left hepatic duct
- 4- Right hepatic duct
- 5- Pancreatic duct

## Answer &amp; Comments

**Answer:** 2- Common bile duct

This patient demonstrates obstructive jaundice and pancreatitis, and hence is likely to have a form of obstruction lower down in the biliary tree which is likely to be due to gallstones.



Biliary Anatomy



[ Q: 2085 ] MRCPass - 2011 January

A 45 year old man presents with painful groin area and fevers.

He had no known past medical history but was a frequent traveller. A month ago, he had returned from India and following a month's trip. He describes having a painless penile ulcer 2 weeks ago. On examination, he had palpable painful inguinal lymph nodes. The blood results are:

Hb 11.5 g/dl

MCV 82 fl

WCC  $8 \times 10^9/l$

platelets  $330 \times 10^9/l$

Blood cultures - no growth

Filarial serology- negative

Chlamydia serology- positive

Monospot test - negative

*What is the likely diagnosis?*

- 1- HIV infection

- 2- Primary syphilis
- 3- Lymphogranuloma venereum
- 4- Chancroid
- 5- Mycobacterium leprae infection

#### Answer & Comments

**Answer:** 3- Lymphogranuloma venereum

Lymphogranuloma venereum (LGV) is primarily an infection of the lymphatic system.

Chlamydia trachomatis is the bacteria responsible for LGV. It gains entrance through breaks in the skin, or the mucous membranes. LGV may begin as a self-limited painless genital ulcer that occurs at the contact site 3-12 days after infection. This is followed by the secondary stage most often occurs 10-30 days later. The infection spreads to the lymph nodes through lymphatic pathways causing lymphangitis and painful lymphadenopathy. Diagnosis is made with Chlamydia serology or PCR of aspirate / pus samples. Treatment is with tetracyclines or erythromycin.

The chancroid (a sexually transmitted disease) can also present with painful inguinal lymphadenopathy and genital ulcers. It does not fit the scenario as Haemophilus ducreyi is the infective organism. Treatment is with a macrolide (erythromycin) or ceftriaxone.



[ Q: 2086 ] MRCPass - 2011 January

A 35 year old woman was admitted to hospital with profuse diarrhoea over several weeks. She had symptoms which started 6 months ago. The diarrhoea was watery and did not have mucus. The symptoms also included nausea, poor appetite and lethargy. On examination, she had a blood pressure of 95 /60 mmHg. She looked relatively well. There was no positive examination findings. Blood test results were: sodium 135 mmol/l

potassium 5.8 mmol/l  
urea 6 mmol/l  
creatinine 90 µmol/l  
ALT 30 (5-35) U/l  
AST 25 (1-31) U/l  
ALP (20-120) U/l  
Bilirubin 13 (1-22) µmol/l  
Albumin 32 (37-49) g/l  
Glucose 5.5 mmol/l

*What is the likely diagnosis?*

- 1- Celiac disease
- 2- Adrenal insufficiency
- 3- Crohn's disease
- 4- Norovirus infection
- 5- Anorexia nervosa

#### Answer & Comments

**Answer:** 2- Adrenal insufficiency

This patient is likely to be Addisonian due to features of hypotension, lethargy, diarrhoea and mild hyperkalaemia (due to low aldosterone levels).



[ Q: 2087 ] MRCPass - 2011 January

A 75 year old woman was referred with a two-month history of generalised weakness, fever, and weight loss.

There was no other relevant past medical history.

On examination she had multiple petechiae present on observation. There was no palpable splenomegaly.

The blood results showed:

Hb was 9.5 g/dl, white cell count  $5.3 \times 10^9/l$ , MCV 112 fl and platelet count was  $89 \times 10^9/l$ . The reticulocyte count was <0.0001%. There was anisocytosis and poikilocytosis was seen in the blood film.

*What is the likely diagnosis?*

- 1- Aplastic anaemia
- 2- Parvovirus infection
- 3- Myelodysplasia
- 4- Multiple myeloma
- 5- Waldenstrom's macroglobulinaemia

#### Answer & Comments

**Answer:** 3- Myelodysplasia

The myelodysplastic syndromes (MDS, formerly known as "preleukemia") are a diverse collection of hematological medical conditions that involve ineffective production of the myeloid cell lines.

The median age at diagnosis of a MDS is between 60 and 75 years.

There is often pancytopenia as seen in this case. A high MCV is common and a blood film often shows poikilocytosis (which is in itself non specific).

In this question, although the picture of the blood tests is of a pancytopenia, the answer is unlikely to be aplastic anaemia as the MCV is high.



[ Q: 2088 ] MRCPass - 2011 January

A 40 year old man presented with epigastric pains and indigestion. He had an upper GI endoscopy which showed oesophagitis and gastritis. A biopsy was taken which showed positive H pylori result and he was commenced on 1 week of triple therapy for eradication.

*How should the eradication be monitored now?*

- 1- Repeat OGD for surveillance
- 2- Repeat OGD with biopsy
- 3- 14 C Breath test
- 4- H pylori serology
- 5- No further monitoring

#### Answer & Comments

**Answer:** 3- 14 C Breath test

With the breath test, patients swallow urea labelled with an uncommon isotope, radioactive carbon-14.

In the subsequent 10-30 minutes, the detection of isotope-labelled carbon dioxide in exhaled breath indicates that the urea was split; this indicates that urease (H. pylori uses to metabolize urea) is present in the stomach. This is a useful non invasive test for monitoring whether eradication is successful.



[ Q: 2089 ] MRCPass - 2011 January

A 34-year-old man presents with a dry cough and shortness of breath. He has typically experienced these dry cough episodes twice a week. He has worked as a spray paint worker in a car factory for 5 years. He does not smoke nor drink any alcohol. On examination, the patient was febrile (39°C), and a clinical lung examination showed diffuse crackles. A chest radiograph showed interstitial infiltrates and bilateral hilar adenopathy.

Pulmonary function tests were performed.

The results were (predicted percentages):

Forced vital capacity (FVC) 1.8 L (60%)

Forced expiratory volume (FEV1) 1.7 L (70%)

FEV1/FVC ratio - 90%

Forced expiratory time (FET) 9.2 sec

Residual volume (RV) 0.8 L (40%)

Total lung capacity (TLC) 2.7 L (50%)

Diffusing capacity (DLCO) Hg 8.7 mL/min/mm Hg (38%)

*What is the likely diagnosis?*

- 1- Asthma
- 2- Chronic obstructive pulmonary disease
- 3- Bronchiolitis obliterans organising pneumonia

- 4- Sarcoidosis  
5- Hypersensitivity pneumonitis

#### Answer & Comments

Answer: 5- Hypersensitivity pneumonitis

Extrinsic allergic alveolitis (hypersensitivity pneumonitis) results from hypersensitivity immune reactions to the repeated inhalation or ingestion of various antigens derived from fungal, bacterial, animal protein, or reactive chemical sources such as dust or paint.

They can also present subacutely with recurrent pneumonia or chronically with exertional dyspnea, productive cough, and weight loss. CXR and High resolution CT often show upper zone pulmonary fibrosis. Lung function tests often show a restrictive picture, with decreased lung capacity and increased FEV1/FVC ratio as demonstrated in this case. The treatment is to reduce exposure to the allergenic component, in this case paint (isocyanates), and exacerbations can be improved with a course of steroids.



[ Q: 2090 ] MRCPass - 2011 January

A 74-year-old man with a history of non hodgkin's lymphoma of the nodular sclerosing type has previously had radiotherapy. He is complaining of lethargy.

*Which one of the following symptoms indicates poor prognosis?*

- 1- Weight gain  
2- Palpitations  
3- Anxiety  
4- Night sweats  
5- Lethargy

#### Answer & Comments

Answer: 4- Night sweats

The B symptoms - fevers, night sweats and weight loss - indicate a poorer prognosis and

are often used in the staging of non-Hodgkin's lymphoma and Hodgkin's lymphoma.



[ Q: 2091 ] MRCPass - 2011 January

A 20 year old lady came to you with a history of intermittent diarrhea.

A biopsy taken during colonoscopy revealed melanosis coli.

*What is the most likely cause for the biopsy finding?*

- 1- Crohn's disease Celiac disease  
2- Celiac disease  
3- Ferrous sulphate use  
4- Laxative overuse  
5- Ulcerative colitis

#### Answer & Comments

Answer: 4- Laxative overuse

Melanosis coli is a disorder of pigmentation of the wall of the colon, identified at the time of colonoscopy.

It is benign, and has no significant correlation with disease. The name is considered a misnomer: the brown pigment seen in the colon is actually lipofuscin, not melanin as the name implies.

The most common cause of melanosis coli is the surreptitious use of laxatives, and commonly anthraquinone containing laxatives such as Senna and other plant glycosides. Endoscopically, the mucosa shows a brownish discoloration.



[ Q: 2092 ] MRCPass - 2011 January

A 47-year-old man presents with palpitations which he has had for 3 months. He feels his 'heart race' regularly.

On examination his pulse is 110 / min, irregularly irregular and respiratory examination is unremarkable. An ECG confirms atrial fibrillation.



*What is the most appropriate next step in management?*

- 1- Digoxin
- 2- Electrical cardioversion
- 3- Amiodarone
- 4- Metoprolol
- 5- Flecainide

#### Answer & Comments

Answer: 4- Metoprolol

In uncomplicated atrial fibrillation a beta blocker should be used first line for rate control and maintenance of sinus rhythm if the patient has paroxysmal AF.

Flecainide would be a good second line option if AF wasn't adequately controlled.

<http://www.nice.org.uk/nicemedia/pdf/CG036niceguideline.pdf>



[ Q: 2093 ] MRCPass - 2011 January

A 45 year old lady presents with lethargy and nausea. Her blood results are listed below :

Hb 12.5 g/dl

MCV 75 fl

WCC  $8 \times 10^9/l$

platelets  $215 \times 10^9/l$

sodium 135 mmol/l

potassium 4.5 mmol/l

urea 8 mmol/l

creatinine 90  $\mu\text{mol/l}$

calcium 1.7 (2.25-2.7) mmol/l

phosphate 0.9 (0.8-8) pmol/l

magnesium 0.8(0.67-0.96) mmol/l.

*Which one of the following findings on her ECG is probable?*

- 1- Tall T wave
- 2- ST depression

- 3- Prolonged QT
- 4- Short PR interval
- 5- Reciprocal changes

#### Answer & Comments

Answer: 3- Prolonged QT

Hypocalcaemia is the main biochemical finding on the blood results in this patient.

The electrolyte causes of prolonged QT are hypokalaemia, hypocalcaemia and hypomagnesaemia.



[ Q: 2094 ] MRCPass - 2011 January

A 35 year old lady presents with palpitations. She has no significant past medical history and does not take regular medications. Her BP was 120 / 70 mmHg and she had a heart rate of 180 bpm. An ECG confirms a narrow complex tachycardia. She was given 6 mg of adenosine with no clinical effect to the heart rate.

*What should be administered next?*

- 1- DC cardioversion
- 2- Intravenous amiodarone
- 3- Adenosine 12 mg
- 4- Bisoprolol 5 mg
- 5- Digoxin 125 mcg

#### Answer & Comments

Answer: 3- Adenosine 12 mg

The patient with rapid narrow complex tachycardia is likely to have supra ventricular tachycardia.

This may be cardioverted by adenosine which blocks conduction at the AV node. The dose of adenosine in this case has to be optimal before trying a second option. 6 mg is unlikely to be adequate and a step up to 12 mg or even 18 mg may be necessary to cardiovert the patient from the SVT to sinus rhythm.



[ Q: 2095 ] MRCPass - 2011 January

A 46 year old woman presents with fevers, night sweats, arthralgia. The urine dipstick showed blood ++ and protein +. On examination, her BP was 110 / 70 mmHg. She had a systolic and diastolic murmur in the aortic area and endocarditis was suspected. An urgent echocardiogram confirmed bacterial vegetations on the aortic valve.

*Which one of the following is an indication for urgent surgery?*

- 1- Aortic regurgitation
- 2- Cardiac failure
- 3- Prolongation of PR interval on the ECG
- 4- Pyrexia
- 5- Renal impairment

#### Answer & Comments

Answer: 3- Prolongation of PR interval on the ECG

In aortic valve endocarditis, prolongation of the PR interval or AV dissociation is a feature of possible aortic root abscess (due to the position of the cardiac conduction system).

This is an indication for urgent surgery.



[ Q: 2096 ] MRCPass - 2011 January

A 23 year old man has been bitten by a dog on the thigh whilst walking in a park. 2 days later he develops erythema around the site and a purulent wound.

*What is best antibiotic to prescribe?*

- 1- Trimethoprim
- 2- Metronidazole
- 3- Flucloxacillin
- 4- Ciprofloxacin
- 5- Co-amoxiclav

#### Answer & Comments

Answer: 5- Co-amoxiclav

Pasteurella (canis or multocoda) species are the most frequent isolates from both dog bites.

Other common aerobes included streptococci, staphylococci, moraxella, and neisseria. Augmentin is the recommended antibiotic, along with tetanus injection for prophylaxis. If there is evidence of cellulites as in this case, then fluclo and benpen should be prescribed.



[ Q: 2097 ] MRCPass - 2011 January

An 20 year old patient is suspected presents with a 6 month history of lethargy and weight gain. She has a BMI of 30. On examination, she looked obese and has abdominal striae. Her Blood pressure is 125 / 90 mmHg. Blood tests show these results: sodium 135 mmol/l, potassium 3.4 mmol/l, urea 5 mmol/l, creatinine 100 µmol/l.

*What is the investigation of choice?*

- 1- Low dose dexamethasone suppression test
- 2- High dose dexamethasone suppression test
- 3- CRH test
- 4- Serum ACTH levels
- 5- Inferior petrosal sinus sampling

#### Answer & Comments

Answer: 1- Low dose dexamethasone suppression test

This patient is likely to have Cushing's syndrome.

Failure of suppression of cortisol with low dose dexamethasone over 2 days confirms Cushing's syndrome. The high dose suppression test is often used to determine likelihood of pituitary dependent Cushing's disease.



[ Q: 2098 ] MRCPass - 2011 January

A 60-year-old, man was admitted to a hospital for the evaluation of a left adrenal mass detected by abdominal ultrasonography. He had no known history of hypertension, diabetes mellitus, and other systemic diseases.

Abdominal magnetic resonance imaging showed a 54 × 50 × 46 mm mixed cystic and solid mass arising from the left adrenal gland. The tumor was suspected as a pheochromocytoma because 24-hour urine metanephrine and vanillylmandelic acid levels were found to be 5 mg (0-1 mg) and 9.2 mg (0-8 mg). The patient's blood pressure was 220/130 mmHg and HR 105/min.

*Which drug should be used to treat the hypertension?*

- 1- Bisoprolol
- 2- Lisinopril
- 3- Phenoxybenzamine
- 4- Bendrofluazide
- 5- Indapamide

#### Answer & Comments

Answer: 3- Phenoxybenzamine

In a patient with phaeochromocytoma, irreversible alpha adrenoceptor blocker such as phentolamine or phenoxybenzamine is recommended as first line agents to treat hypertension (Irreversible blockade is important because a massive release of catecholamines from the tumor may overcome a reversible blockade).



[ Q: 2099 ] MRCPass - 2011 January

A 50 year old man presents with a three month history of weight loss, diffuse myalgia, epistaxis and hemoptysis.

He had a past medical history of hypertension, and described episodes of haematuria.

Physical examination showed that he had diffuse lower extremity muscle tenderness, crepitations in the lungs and a rash on the trunks. Chest x-ray showed bilateral diffuse pulmonary infiltrate.

Investigations showed:

urine protein 1+

urine sediment - many red blood cell and granular casts

erythrocyte sedimentation rate (ESR) was 65 mm/hr

anti-nuclear antibody (ANA) - borderline positive 1:40

anti-streptolysin O (ASO) antibody - < 1:40

c-ANCA - positive at a titer of 1:320, PR 3 positive

p - ANCA - negative

anti-double stranded DNA titer < less than 1:2.

*What is the diagnosis?*

- 1- Goodpasture's syndrome
- 2- Systemic lupus erythematosus
- 3- Microscopic polyangiitis
- 4- Wegener's granulomatosis
- 5- Sarcoidosis

#### Answer & Comments

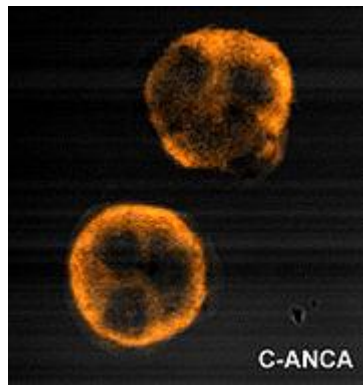
Answer: 4- Wegener's granulomatosis

The diagnosis fits Wegener's best because of the pulmonary and renal involvement.

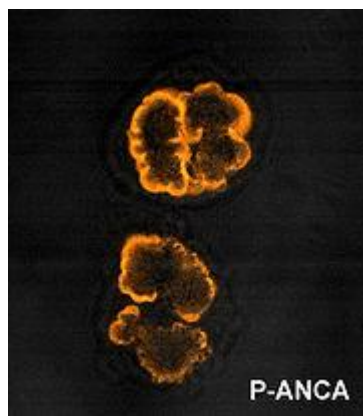
In Wegener's, there is often pulmonary haemorrhage, haemoptysis, infiltrates on the CXR as well as cavitation. It is also associated with rapidly progressive segmental necrotising glomerulonephritis (75%) which may lead to renal failure.

A diffuse, cytoplasmic pattern of staining results from binding of ANCA to antigen targets throughout the neutrophil cytoplasm, the most common protein target being proteinase 3 (PR3). PR3 is the most common

antigen target of ANCA in patients with Wegener's granulomatosis.



cANCA - cytoplasmic staining



p ANCA - perinuclear staining



[ Q: 2100 ] MRCPass - 2011 January

A 41 year old woman presented with rectal bleeding. She has no past medical history. Over the last two weeks, she noticed rectal bleeding, and alternating constipation and diarrhoea. Physical examination revealed brown black pigmentation on the oral lips, the buccal mucosa, about 1-3 mm in diameter. She mentioned that these lesions were longstanding. There were no palpable lymph nodes palpable, no abdominal mass, hepatosplenomegaly, or ascites.

*What is the likely diagnosis?*

- 1- Angiodysplasia
- 2- Colon carcinoma
- 3- Crohn's disease
- 4- Haemorrhoids

5- Ulcerative colitis

#### Answer & Comments

Answer: 2- Colon carcinoma

The pigmented oral lesions point towards a diagnosis of Peutz-Jegher's syndrome, with the cause of rectal bleeding being a rectal or colonic carcinoma.

Peutz-Jeghers syndrome is an autosomal dominant disease characterized by the development of benign hamartomatous polyps in the gastrointestinal tract and hyperpigmented macules on the lips and oral mucosa. There is a significant association with increased risk of carcinoma. Cumulative lifetime cancer risk begins to rise in middle age. Gastrointestinal cancers and pancreatic cancer are associated.



[ Q: 2101 ] MRCPass - 2011 January

A 45-year-old man was admitted with acute-onset lower back and diarrhoea occurring 7-8 times a day. Five weeks earlier, he had a permanent pacemaker insertion for symptomatic bradycardia. On examination he was pyrexial. He had restricted lumbar spine movement with pain at this site.

Investigations showed a normochromic normocytic anaemia (haemoglobin 9.6 g/l), and a white cell count of  $18.0 \times 10^9/l$  ( $4.0-11.0 \times 10^9/l$ ), urea 8.0 mmol/l (2.5-7.5 mmol/l), creatinine of 160  $\mu\text{mol/l}$  (60-120  $\mu\text{mol/l}$ ), erythrocyte sedimentation rate (ESR) of 108 mm/h and CRP of 210 mg/l (<20 mg/l).

*What is the likely diagnosis?*

- 1- Ankylosing spondylitis
- 2- Crohn's disease
- 3- Clostridium difficile infection
- 4- Dysfunctional pacemaker
- 5- Staphylococcal discitis

**Answer & Comments**

**Answer:** 5- Staphylococcal discitis

This is a case of septic discitis (infection of the spinal disc) due to staphylococcus, and it is likely to be due to the recent pacemaker insertion.

Back pain, fever and neurological signs are often present in septic discitis. 40% of cases are due to staph aureus, and blood cultures are often positive. MRI of the spine will help to confirm the diagnosis.



[ Q: 2102 ] MRCPass - 2011 January

A 30 year old patient has previously presented with jaundice and diagnosed to have G6PD deficiency. She seeks advice about travelling to Africa because she wants to take malaria prophylaxis.

*Which drug should she avoid taking?*

- 1- Quinine
- 2- Chloroquine
- 3- Artesunate
- 4- Primaquine
- 5- Doxycycline

**Answer & Comments**

**Answer:** 4- Primaquine

A patient who is known to have G6PD deficiency is prone to having haemolytic jaundice due to drugs.

Drugs with risks of causing haemolysis in G6PD deficiency are:

Dapsone

Nitrofurantoin

Sulphonamides (co trimoxazole or septrin)

Quinolones (ciprofloxacin)

Primaquine (as an anti malarial drug)



[ Q: 2103 ] MRCPass - 2011 January

A 53-year-old man was driving in a car with his wife when they had an accident. He suffered concussion during the car accident. 6 months following this incident he consults his GP mentioning that is tearful, agitated, and unable to concentrate at work. He has avoided visiting the site of the accident, and also seems to deny the incident. His wife's belongings are left untouched since the day of the accident, and he still has visions of his wife.

*What is the most likely cause?*

- 1- Anxiety disorder
- 2- Post traumatic stress disorder
- 3- Grief reaction
- 4- Post concussion
- 5- Psychotic depression

**Answer & Comments**

**Answer:** 3- Grief reaction

A grief reaction can last for up to 12 months, but can vary within different cultures.

The average is probably around six months. Symptoms of grief reaction are:

disbelief, shock, numbness and feelings of unreality feelings of guilt

sadness and tearfulness

preoccupation with the deceased

disturbed sleep and appetite and, occasionally, weight loss

seeing or hearing the voice of the deceased



## [ Q: 2104 ] MRCPass - 2011 January

A 30 year old patient has been on warfarin for atrial fibrillation. His INR is 2.8.

*Which one of the following is inhibited?*

- 1- Factor V
- 2- Factor VII
- 3- Factor VIII
- 4- Platelet
- 5- Fibrinogen

## Answer &amp; Comments

Answer: 2- Factor VII

Warfarin is an antagonist of vitamin K, a necessary element in the synthesis of clotting factors II, VII, IX and X.



## [ Q: 2105 ] MRCPass - 2011 January

A 60 year-old woman presents with a history of acute leukemia of the M1 phenotype. Initial treatment consisted of 2 cycles of induction therapy and 1 cycle of high-dose cytarabine/mitoxantrone.

1 week later she became very unwell. She was admitted to hospital and had a temperature of 39.5 C. She was treated with teicoplanin and gentamicin intravenous, but 24 hours later she worsened with high fevers.

*What should be added to the treatment regime?*

- 1- Vancomycin
- 2- Amphotericin
- 3- Aciclovir
- 4- Flucloxacillin
- 5- Meropenem

## Answer &amp; Comments

Answer: 2- Amphotericin

Patients with AML who undergo chemotherapy are at increased risk of fungal

infections, most commonly candidiasis and aspergillosis.

This patient may have invasive fungal infection. Amphotericin B therapy is the treatment option for invasive candidiasis and is also a treatment option for invasive aspergillosis.



## [ Q: 2106 ] MRCPass - 2011 January

A 40 year old African man had been home for a holiday but this was 6 months ago. He now presents with fever and intermittent rigors. There has been no other travel history and he has no past medical illnesses. The patient gave the history of intermittent high fever for the past 5 days accompanied by chills and rigors, body-ache and vomiting.

*What is the likely diagnosis?*

- 1- Plasmodium malaria
- 2- Plasmodium falciparum
- 3- Plasmodium ovale
- 4- Dengue
- 5- Trypanosomiasis

## Answer &amp; Comments

Answer: 3- Plasmodium ovale

Due to the long period where the patient has been well, the most likely cause is plasmodium ovale or vivax infection.

The hypnozoites can develop into mature schizonts and release merozoites into the blood stream causing clinical symptoms of malaria (relapsing malaria) even many months after the primary infection.

Relapses can occur up to 5 years after infection. Plasmodium vivax infection may present similarly.



## [ Q: 2107 ] MRCPass - 2011 January

A 62-year-old female is brought to A&E by her family, who are concerned about



her increasing confusion over the past 2 days. There is a history of diarrhea in the preceding few days. On examination she is found to be pyrexial at 38°C. Breath sounds are clear and there is mild tenderness in the lower abdomen. There was no focal neurological signs.

Blood tests reveal :

Hb 9.6 g/dl

WCC  $12 \times 10^9/l$

Platelets  $65 \times 10^9/l$

sodium 138 mmol/l

potassium 4.7 mmol/l

Urea 23.1 mmol/l

Creatinine 360 mmol/l

A blood film shows schistocytes.

*What is the most likely organism?*

- 1- Streptococcus faecalis
- 2- E coli
- 3- Staphylococcus aureus
- 4- Mycoplasma pneumoniae
- 5- Bacteroides

#### Answer & Comments

Answer: 2- E coli

The diagnosis here is Hemolytic uremic syndrome (HUS). It is characterized by the triad of microangiopathic hemolytic anemia, thrombocytopenia, and acute renal failure.

Diarrhea and upper respiratory infection are the most common precipitating factors. The most common cause of HUS is a toxin produced by Escherichia coli serotype O157:H7.

Additional agents include Shigella, Salmonella, Yersinia, and Campylobacter species.



[ Q: 2108 ] MRCPass - 2011 January

A 20 year old female patient

presents with a history of shortness of breath, anorexia, low grade fever, and severe anemia. Her investigation results showed:

Hb 4.5 g/dl

MCV 75 fl

WCC  $16 \times 10^9/l$  (60% blasts, 30% polymorphs)

platelets  $90 \times 10^9/l$

Bone marrow biopsy showed:

hypercellularity, altered myeloid to erythroid (M:E) ratio, decreased megakaryocytosis, mixed erythropoiesis.

There were blasts 65%, promyelocytes 61%, myelocytes 02%, metamyelocytes 0.1%, band cells 0.1%, polymorphs 19%, eosinophils 4%, lymphocytes 35%.

There were occasional blasts with Auer rods, many with azurophilic granules, suggestive of acute myeloblastic leukaemia.

The patient was assessed for prognosis.

*Which one of the following is a marker of a good prognosis in acute promyelocytic leukaemia?*

- 1- Female sex
- 2- T (15:17)
- 3- Age of >60 years
- 4- Elevated LDH
- 5- Philadelphia chromosome t(9:22) positive

#### Answer & Comments

Answer: 2- T (15:17)

Acute myeloid leukemia (AML), also known as acute myelogenous leukemia, is the most common acute leukemia affecting adults.

Anaemia, fever, weight loss, bleeding (thrombocytopenia) and also infections can be presenting symptoms. According to the widely used WHO criteria, the diagnosis of AML is established by demonstrating involvement of more than 20% of the blood and/or bone

marrow by leukemic myeloblasts. There are 8 subtypes.

Patients with AML can have high, normal, or low WBC counts.

The single most important prognostic factor in AML is cytogenetics, or the chromosomal structure of the leukemic cell. Cytogenetic karyotypes e.g. t(15;17), t(8;21) and inv/del/t(16) are associated with good prognosis. Because acute promyelocytic leukemia (APL) has the highest curability and requires a unique form of treatment, it is important to quickly establish the diagnosis, particularly the t(15;17) translocation.

A number of other cytogenetic abnormalities are known to associate with a poor prognosis: 5, -7, del(5q), Abnormal 3q, Complex cytogenetics.

Age >60 years and elevated lactate dehydrogenase level are also associated with poorer outcomes in AML



[ Q: 2109 ] MRCPass - 2011 January

A 29 year old female took 40 tablets of Paracetamol and was admitted to hospital. She is seen the following day and needs assessment of her medical condition.

*Which of the following is the best investigation to assess prognosis after 26 hours for a paracetamol overdose?*

- 1- Prothrombin time
- 2- AST
- 3- Paracetamol level
- 4- Urea and creatinine
- 5- Bilirubin

#### Answer & Comments

**Answer:** 1- Prothrombin time

Although all of the tests may be abnormal, the INR / prothrombin time measurement is the most important in predicting prognosis (part

of the child pugh criteria for liver failure) after a paracetamol overdose.



[ Q: 2110 ] MRCPass - 2011 January

A 41 year old Caucasian female presented with malaise, dysphagia and sclerodactyly and Raynaud's phenomenon for the last 3 months.

On physical examination she was afebrile and had a supine blood pressure of 110/80mm Hg. Sclerodactyly and telangiectasia were observed in both hands. Blood tests revealed:

Hb 11.5 g/dl, MCV 85 fl

erythrocyte sedimentation rate of 80 mm/first hour, antinuclear antibody (ANA) - strongly positive antitopoisomerase I antibody (formerly anti SCL-70 antibody) positive

normal C3 and C4

anti-DNA, anti-centromere, anti-RNP, anti-Ro and La antibodies - negative

Chest x-ray showed bilateral basilar interstitial infiltrates.

*What is the diagnosis?*

- 1- Hereditary haemorrhagic telangiectasia
- 2- Sjogren's syndrome
- 3- Wegener's granulomatosis
- 4- Oesophageal carcinoma
- 5- Limited systemis sclerosis

#### Answer & Comments

**Answer:** 5- Limited systemis sclerosis

The clues here for limited systemic sclerosis (limited scleroderma) are dysphagia, sclerodactyly and Raynaud's phenomenon.

70% of patients initially present with Raynaud's phenomenon; 95% eventually develop it during the course of their disease. Oesophageal dysmotility may cause reflux, aspiration or dysphagia. Pulmonary fibrosis and renal impairment are also associated.

Antinuclear antibodies are present in about 95% of the patients. Topoisomerase I antibodies (formerly Scl-70) are present in approximately 30% of patients with diffuse disease (absent in limited disease) and are associated with pulmonary fibrosis. Anticentromere antibodies are present in about 60-90% of patients with limited disease and are rare in patients with diffuse disease (which is more likely in this case).



[ Q: 2111 ] MRCPass - 2011 January

A 40 year old lady has been commenced on docetaxel as part of chemotherapy for ovarian carcinoma.

*What is its mechanism of action?*

- 1- Pyrimidine analogue
- 2- Purine analogue
- 3- Inhibition of thymidylate synthase
- 4- Binds and inhibits microtubules
- 5- Anthracycline intercalating DNA

#### Answer & Comments

Answer: 4- Binds and inhibits microtubules

Docetaxel is a clinically well established anti mitotic chemotherapy drug used mainly for the treatment of breast, ovarian, and non-small cell lung cancer.

Docetaxel binds to microtubules reversibly with high affinity with the end result of reducing mitotic division of cells.



[ Q: 2112 ] MRCPass - 2011 January

A 50-year-old man presented to the emergency department with complaints of fatigue, nausea and vomiting for several months. He had a 20 pack-year smoking history and alcohol intake consisted of a 20 units a day. On examination, he was jaundiced and had palpable hepatomegaly. He was organised to have upper GI endoscopy, which

showed oesophageal varices which were not bleeding.

*Which one of the following drugs should the patient be commenced on for prophylaxis of bleeding?*

- 1- Terlipressin
- 2- Propanolol
- 3- Lansoprazole
- 4- Mesalazine
- 5- Prednisolone

#### Answer & Comments

Answer: 2- Propanolol

For oesophageal varices, the non-selective  $\alpha$ -blockers (e.g., propranolol) and nitrates (e.g. isosorbide mononitrate) have a role in prophylaxis of bleeding. Terlipressin (vasopressin analogue) is used in acute bleeding as it is vasoactive.



[ Q: 2113 ] MRCPass - 2011 January

A 60-year-old woman is investigated for weight loss, fatigue and anaemia. These symptoms have been present for 1 year. She has a history of hypertension and transient ischaemic attack 2 years ago. Clinical examination reveals splenomegaly palpable 5 cm below the costal margin. A full blood count is reported as follows:

Hb 9.8 g/dl

Platelets  $380 \times 10^9/l$

WCC  $120 \times 10^9/l$

Blood film. Demonstrates left shift with predominating myelocytes. Low percentage of blast cells

*What is the likely diagnosis?*

- 1- Chronic myeloid leukaemia
- 2- Acute lymphoblastic leukaemia
- 3- Polycythaemic rubra vera
- 4- Waldenstrom's macroglobulinaemia

## 5- Myelodysplasia

## Answer &amp; Comments

Answer: 1- Chronic myeloid leukaemia

The diagnosis here is chronic myeloid leukaemia, which accounts for 20% of all leukaemias.

It is one of the forms of myeloproliferative leukaemias. It occurs mainly in middle aged and elderly people and is characterised by marked leucocytosis. CML is often suspected when the blood count shows increased granulocytes of all types, typically including mature myeloid cells. A left shift (presence of immature cells) myeloid series is present. In 95% of patients, there is the presence of the chromosomal translocation, the Philadelphia chromosome.



[ Q: 2114 ] MRCPass - 2011 January

A 85 year old man was hospitalised after having found on the floor at home. He had a history of ischaemic heart disease, diabetes and previous surgery for prostate carcinoma. Initial investigations suggested that he had a urinary tract infection. During the admission, he suddenly became very agitated at night, and was lashing out at any nursing staff who approached him to feed and administer medications.

*Which one of the following medications should be used for sedation?*

- 1- Propofol
- 2- Haloperidol
- 3- Olanzapine
- 4- Chlorpromazine
- 5- Temazepam

## Answer &amp; Comments

Answer: 2- Haloperidol

Pharmacologic management is necessary in more severe cases of agitation in which patients are a danger to themselves or others, or are impeding medical evaluation and care.

The ideal agent for undifferentiated acutely agitated geriatric patients would be effective with a rapid onset of action and would be safe with minimal side effects. Pharmacologic options include the benzodiazepines and the typical and atypical antipsychotics agents. The typical antipsychotic Haloperidol is commonly used for the treatment of acute agitation because of its lower incidence of respiratory depression, hypotension and anticholinergic effects. Chlorpromazine and thioridazine are also sedating antipsychotics, but they have low potency. Olanzapine is an atypical antipsychotic which may be used for chronic agitation. Benzodiazepines may also be used for acute agitation, lorazepam and midazolam are more commonly used - However they are associated with increased risk of falls, hypoxia and respiratory depression.



[ Q: 2115 ] MRCPass - 2011 January

A 30-year-old man gradually noticed that he had jaundice and dark urine since being started on two medications by the GP. He had no other symptoms; in particular there was no itching, fever or bleeding, and he was not previously taking any drugs. On examination, he was anaemic and jaundiced.

His blood results are: Hb 5.5 g/dl, WCC  $7 \times 10^9/l$ , platelets  $200 \times 10^9/l$ . The blood film showed polychromasia with nucleated red cells and spherocytes; the reticulocyte count was 9%. His serum bilirubin (47mmol/l), aspartate transaminase (90iu/l) and lactate dehydrogenase levels (5721iu/l) were raised.

*Which one of the following tests will reveal autoimmune haemolytic anaemia?*

- 1- Cold agglutinins
- 2- Direct antiglobulin test
- 3- HAM's test

4- Haptoglobins

5- G6PD levels

#### Answer & Comments

Answer: 2- Direct antiglobulin test

Antibody Autoimmune Hemolytic Anemia (AIHA) is the most common of the autoimmune hemolytic diseases.

The most common antibody involved in warm antibody AIHA is IgG. Diagnosis is made by a positive direct Coombs test.

The direct Coombs test is used to detect red blood cells sensitized with IgG antibody, and complement proteins. It detects antibodies bound to the surface of red blood cells in vivo.

Corticosteroids and immunoglobulins are two commonly used treatments for warm antibody AIHA. Initial treatment consists of prednisolone. If ineffective, splenectomy should be considered.

Cold agglutinins are found in mycoplasma infection and infectious mononucleosis.



[ Q: 2116 ] MRCPass - 2011 January

A 22 year old woman presented to the Emergency Department because of progressively severe unilateral knee pain of 24 hours duration. There was no preceding injury or unusual physical activity was identified. She did not have any significant past medical history, but has been on a trip around Europe over the last month. Plain radiographs of the knee were unremarkable. On examination, the left knee, right knee, right wrist and elbows were erythematous and swollen. She did not have a skin rash. A joint aspirate was done and it showed no organisms but had increased white cells, predominantly neutrophils. Her ESR is 60 mm/hr. A urethral swab was taken and this did not show any cultures.

*What is the most likely cause?*

1- Lyme disease

2- Reactive arthritis

3- Septic arthritis

4- Psoriatic arthritis

5- Gonococcal arthritis

#### Answer & Comments

Answer: 2- Reactive arthritis

This young lady with no past medical history is likely to have a reactive arthritis or septic arthritis.

The arthralgia of gonococcal infection is most often an asymmetric polyarthralgia. In this patient However, the urethral cultures are negative hence a reactive arthritis to a different infection (e.g. Chlamydia, salmonella, shigella, campylobacter) which occurred during the recent travel is more likely.



[ Q: 2117 ] MRCPass - 2011 January

A 26 year old woman was admitted 24 hours after taking 20 tablets of 50mg of amitriptyline. She had no history of diabetes or any other illnesses. On admission she had a low conscious level and restless, the pulse was 130 beats per minute and her blood pressure was 110/70mmHg. The heart sounds were normal. The pupils were dilated but reactive to light. The electrocardiogram (ECG) revealed sinus tachycardia and the QRS duration was wide.

*What drug should be given?*

1- Diazepam

2- Naloxone

3- Flumazenil

4- Sodium chloride

5- Sodium bicarbonate

#### Answer & Comments

Answer: 5- Sodium bicarbonate

In amitriptyline overdoses, there are risks of tachyarrhythmias which are best treated by correction of hypoxia and acidosis.

Even in the absence of acidosis, sodium bicarbonate should be given by intravenous infusion to adults with arrhythmias or clinically significant QRS prolongation on the ECG.



[ Q: 2118 ] MRCPass - 2011 January

A 62 year old man presents with dysphagia and dysphonia. Cranial nerve examination revealed left-sided partial ptosis with miosis, tongue deviation to the left, an absent gag reflex, palatal palsy on the left, a weak voice, and a wasted left sternocleidomastoid muscle.

*Which one of the following areas is neurological damage most likely?*

- 1- Pons
- 2- Lateral ventricles
- 3- Jugular foramen
- 4- Stylomastoid foramen
- 5- Cerebellopontine

#### Answer & Comments

Answer: 3- Jugular foramen

The jugular foramen syndrome is also known as Vernet's syndrome.

The jugular foramen allows passage through of IX, X and XI cranial nerves. In jugular foramen syndrome, patients present with difficulty in phonation and aspiration and ipsilateral motor paralysis of the vocal cord, soft palate (curtain sign), superior pharyngeal constrictor, sternocleidomastoid, and trapezius.

This syndrome may be caused by multiple etiologies including trauma or tumor growth for example, slow growing vascular tumours such as glomus tumours. It can also involve

the cervical ganglia of the sympathetic trunk, leading to Horner's syndrome.



[ Q: 2119 ] MRCPass - 2011 January

A 75-year old woman has presented to the clinic for assessment. She has a past medical history of palpitations and is suspected to have congenital long QT syndrome from evidence of her ECG findings.

*Which one of these drugs should be avoided?*

- 1- Amoxycillin
- 2- Thyroxine
- 3- Sertraline
- 4- Co-proxamol
- 5- Morphine

#### Answer & Comments

Answer: 3- Sertraline

Common drugs which cause long QT syndrome are:

- tricyclic antidepressants (e.g. sertraline)
- antiarrhythmics:
  - quinidine
  - disopyramide
  - procainamide
  - amiodarone
  - sotalol
- non-sedative antihistamine toxicity
  - terfenadine
- antimalarials
  - halofantrine
- antipsychotics
  - notably haloperidol and thioridazine
- cisapride



- methadone



[ Q: 2120 ] MRCPass - 2011 January

A 66 year old man presented with a sudden onset severe headache. There is a history of hypertension and asthma. When he was brought into hospital, he was found to have a GCS score of 14. On examination, his BP was 180/70 mmHg. He had a CT scan which showed subarachnoid haemorrhage and he was commenced on nimodipine and monitored as an inpatient. On day 5, he became more drowsy and confused. He did not complain of a headache and had no focal neurological signs. His GCS score dropped to 9.

*What is the most likely complication?*

- 1- Subdural haematoma
- 2- Hydrocephalus
- 3- Cerebral infarct
- 4- Sagittal sinus thrombosis
- 5- Herniation of the brainstem

#### Answer & Comments

Answer: 2- Hydrocephalus

After the first 24 hours have passed, rebleeding risk remains around 40% over the subsequent four weeks.

The use of calcium channel blockers, thought to be able to prevent the spasm of blood vessels by preventing vasospasm. The oral calcium channel blocker nimodipine improves outcome if administered between the fourth and twenty-first day after the hemorrhage. Hydrocephalus may complicate SAH in both the short- and long term and may lead to a drop in the GCS score.



[ Q: 2121 ] MRCPass - 2011 January

A 17-year-old woman complained of polydipsia, polyuria, and nocturia. Her glucose

tolerance test and urinalysis were both normal. During a water deprivation test confirmed diabetes insipidus. Her serum osmolality was 366 mOsm/kg, while her urine osmolality was 156 mOsm/kg. She was given 1-desmimo-8D-arginine-vasopressin (DDAVP), and the results revealed suspected nephrogenic diabetes insipidus. In this condition, *which one of these receptors is defective?*

- 1- Calcium
- 2- Potassium
- 3- Aquaporin 2
- 4- Erythropoietin
- 5- Cytosome

#### Answer & Comments

Answer: 3- Aquaporin 2

Aquaporins selectively conduct water molecules in and out of the cell, while preventing the passage of ions and other solutes.

There are several types of aquaporin receptors, and aquaporin 2 absorbs water in response to antidiuretic hormone.

Nephrogenic diabetes insipidus arises from defective or absent receptor sites at the cortical collecting duct segment of the nephron or defective or absent aquaporin, the protein that transports water at the collecting duct (autosomal recessive, locus 12q13).



[ Q: 2122 ] MRCPass - 2011 January

A patient with hemophilia A was given DDAVP prior to dental extraction.

*What is its mechanism of action in this situation?*

- 1- Blocks anti diuretic hormone action
- 2- Release stored factor VIII
- 3- Increases ristocetin co factor activity
- 4- Promotes antithrombin activity

## 5- Blocks the intrinsic pathway

## Answer &amp; Comments

Answer: 2- Release stored factor VIII

Desmopressin can be used to promote the release of von willebrand factor and factor VIII in patients with disorders such as von Willebrand disease and mild hemophilia A (factor VIII deficiency).

Although the mechanisms are not well understood, desmopressin causes vw F and factor VIII to be released from storage sites such as vascular endothelium.



[ Q: 2123 ] MRCPass - 2011 January

A 25 year old man was admitted to the Psychiatric Ward with symptoms of aggressiveness, inappropriate behaviour and cyclothymia. On examination there was evidence of psychomotor agitation, pressure of speech and flight of ideas. A drug screen was negative. A head CT was within normal limits. A diagnosis of mania was made.

*What drug should be commenced?*

- 1- Fluoxetine
- 2- Amitriptyline
- 3- Diazepam
- 4- Lithium
- 5- Clozapine

## Answer &amp; Comments

Answer: 4- Lithium

Lithium has traditionally been the first line of treatment for mania since the 1970s and evidence continues to show its effectiveness.

It can also be used as a mood stabiliser.



[ Q: 2124 ] MRCPass - 2011 January

A 66 year old man presents with central chest pains radiating to the arm and

the scapula. He has a history of hypertension and diabetes. He takes aspirin, gliclazide and metformin. On examination, he has absent pulses on the right arm and an irregularly irregular heart beat. The blood pressure is 160 / 100 mmHg. He had left sided arm and leg weakness compared to the right.

*What is the most likely diagnosis?*

- 1- Thromboembolic CVA
- 2- Takayasu's arteritis
- 3- Aortic dissection
- 4- Left ventricular aneurysm
- 5- Ventricular septal defect

## Answer &amp; Comments

Answer: 3- Aortic dissection

The patient has chest pain mimicking the clinical history of myocardial infarction but has two other features (absent pulses unilaterally and hemiparesis) which could be manifestations of occlusion of vascular supply from the aorta.

In aortic dissection, if the dissection flap occludes the blood supply to the right arm (subclavian artery) then an absent pulse may occur and if the flap occludes the blood supply to the brain (carotid arteries) a hemiparesis can occur.



[ Q: 2125 ] MRCPass - 2011 January

A 62-year-old man is examined in the cardiology clinic.

During cardiac examination it is noted that the pulmonary component of the second heart sound occurs before the aortic component.

*Which one of the following is associated with this finding?*

- 1- Pulmonary stenosis
- 2- Left bundle branch block
- 3- Right bundle branch block

4- Atrial septal defect

5- Deep inspiration

#### Answer & Comments

**Answer:** 2- Left bundle branch block

This patient has reversed splitting of the second heart sound.

Left bundle branch block causes a reversed split second heart sound as it results in a delay in the aortic component.



[ Q: 2126 ] MRCPass - 2011 January

A 62 year old man presents with worsening breathlessness, confusion and headache. Since three months ago, he began to have progressive exertional dyspnea, aching in the legs, and pain in the left arm (without chest discomfort) after 50 yards. Upon further investigation, the results were obtained:

IgA 2.8 (0.5-4.0) g/l

IgG 7 (5.0-13.0) g/l

IgM 24 (0.3-2.2) g/l

ESR 90 mm/hr

*Which one of the following is likely to be associated?*

- 1- Hypercalcaemia
- 2- Hyperviscosity
- 3- Chronic renal failure
- 4- Diarrhoea
- 5- Demyelination

#### Answer & Comments

**Answer:** 2- Hyperviscosity

In this scenario, there is likely to be a pulmonary embolus but the underlying diagnosis is likely to be Waldenström's macroglobulinemia due to the high IgM levels.

Waldenström's macroglobulinemia is a malignant tumor of lymphocytic and plasmacytic cells that secrete IgM. Patients often present with hepatosplenomegaly and lymphadenopathy. Most of the clinical manifestations are due to the hyperviscosity syndrome. Common presentations are: fatigue, serum hyperviscosity - causing mucosal and gastrointestinal bleeding, and retinal haemorrhage); due to engorged vessels and platelet dysfunction, purpura, hepatosplenomegaly and lymphadenopathy, neurologic symptoms - alterations in consciousness, peripheral neuropathy, visual disturbance, nausea and vertigo.



[ Q: 2127 ] MRCPass - 2011 January

A 71 year old man presents with shortness of breath on exertion. He has a history of working in a dockyard. He has smoked 15 cigarettes a day for the past 20 years. He had lost more than 7 kg in weight over the past two months. On examination, tar stained fingers and grade 3 finger clubbing are noted. Auscultation and percussion of the chest are suggestive of right sided pleural effusion. A chest X ray confirms that he has a right sided pleural effusion and also pleural plaques. Mesothelioma is suspected.

*What is the best way of confirming the diagnosis?*

- 1- MRI scan of the chest
- 2- Closed lung biopsy
- 3- Bronchoscopy
- 4- Fine needle aspiration
- 5- Video assisted thoracoscopy (VATS) biopsy

#### Answer & Comments

**Answer:** 5- Video assisted thoracoscopy (VATS) biopsy

Pleural mesothelioma usually begins as discrete plaques and nodules that coalesce to produce a sheetlike neoplasm.

Subcutaneous malignant seeding of the needle tract is a well-known complication of percutaneous fine-needle aspiration biopsy despite the fact that it may be less invasive. Thus for sake of accuracy, a CT guided or thoracoscopically guided biopsy (VATS) should be performed if mesothelioma is suggested, and results are diagnostic in 98% of cases.



[ Q: 2128 ] MRCPass - 2011 January

A 43 year old woman presents with breathlessness and chest pains. She has a history of pulmonary fibrosis associated with connective tissue disease. She takes prednisolone, n- acetylcysteine, salbutamol and atrovent nebulisers. A lung function test was organised to investigate the cause of breathlessness and results are:

FVC (l) (% predicted) 2.28 (66%)

FEV1 (l) (% predicted) 2.04 (70%)

FEV1/FVC (%) 89

total lung capacity (TLC) = 2.9 L (70%)

TLCO mmol/kPa/min (% predicted) 8.5 (110)

KCO mmol/kPa/min/l (% predicted) 4.4 (150)

**What is the diagnosis?**

- 1- Pulmonary haemorrhage
- 2- Pulmonary embolism
- 3- Pleural effusion
- 4- Emphysema
- 5- Diaphragmatic weakness

#### Answer & Comments

**Answer:** 1- Pulmonary haemorrhage

The lung function shows a restrictive picture, reduced FEV1 and FVC, which are consistent with the underlying connective tissue disease.

However, as well as a slightly increased TLCO, there is significantly increased KCO (transfer factor) which suggests pulmonary haemorrhage.

Transfer factor for carbon monoxide (TLCO) is a useful investigation in alveolar haemorrhage. It is actually the product of alveolar volume and carbon monoxide transfer coefficient (KCO). The alveolar volume is mildly reduced because of alveolar filling with blood, and KCO is considerably increased because the inhaled CO reacts with extravascular haemoglobin. An increased TLCO with considerably increased KCO and mildly reduced alveolar volume are characteristic of pulmonary haemorrhage.



[ Q: 2129 ] MRCPass - 2011 January

A 65-year-old was brought into hospital for assessment of a progressive memory loss and unsteadiness. A friend gives a history that he has worsening symptoms of difficulty walking, headaches and urinary incontinence for the past ten months. On examination, he walks with a wide based gait and has an MMSE score of 18 / 30. An MRI scan was organised, and this showed significantly dilated ventricles with no identifiable obstructive lesion.

**What should be done?**

- 1- CT angiogram
- 2- Lumbar puncture with CSF drainage
- 3- Trial of levodopa
- 4- Burr hole surgery
- 5- Intravenous methylprednisolone

#### Answer & Comments

**Answer:** 2- Lumbar puncture with CSF drainage

This patient has Normal pressure hydrocephalus (NPH) is a clinical symptom complex characterized by a triad of symptoms which are: abnormal gait, urinary incontinence, and dementia.

Is a form of communicating hydrocephalus in which the intracranial pressure, as measured by lumbar puncture, is normal or raised.

Removal of CSF is a good diagnostic test as symptoms often improve after a significant volume of CSF is drained. A good response suggests that ventriculo-peritoneal shunting should be considered as definitive treatment.



[ Q: 2130 ] MRCPass - 2011 January

A 36-year-old white woman presented with a 5 year history of plaques over both shins. She had noted the gradual development of fine blood vessels on her shins. On examination, 10- to 15-cm, yellow, atrophic, centrally scarred plaques with multiple telangiectases around the borders were seen over both shins.

*What should be checked?*

- 1- Thyroid stimulating hormone (TSH)
- 2- Cortisol
- 3- Fasting blood glucose
- 4- Platelet count
- 5- Erythrocyte Sedimentation Rate

#### Answer & Comments

Answer: 3- Fasting blood glucose

The diagnosis is likely to be Necrobiosis lipoidica which is associated with diabetes, hence the necessity to check the blood glucose.

The lesions most commonly are located on the shins but may occur on the face, trunk, and arms.

They typically start as erythematous papules over the pretibial areas and slowly enlarge and evolve to well-demarcated, atrophic, shiny, yellow-brown telangiectatic plaques. They usually are multiple and bilateral. The clinical appearance of necrobiosis lipoidica is distinctive. The differential diagnostic considerations include granuloma annulare (typically found on the dorsa of hands, fingers, and feet), sarcoidosis (red-brown papules on

the scalp, face, or extremities) and erythema nodosum (there are no telangiectasia).



[ Q: 2131 ] MRCPass - 2011 January

A 32-year-old woman presented with a 2-day history of severe headache. She was currently 30 weeks pregnant. She had a history of hypertension, was a non-smoker and was not diabetic.

On examination, she had a red right eye with mild exophthalmos and clinically obvious palsies of the right oculomotor, trochlear, ophthalmic, and abducens nerves. There was loss of pinprick sensation over the forehead.

*What is the diagnosis?*

- 1- Orbital cellulitis
- 2- Cavernous sinus thrombosis
- 3- Midbrain infarct
- 4- Posterior inferior cerebellar infarct
- 5- Grave's disease of the eye

#### Answer & Comments

Answer: 2- Cavernous sinus thrombosis

Cavernous sinus thrombosis is a very rare, typically septic, thrombosis of the cavernous sinus, usually caused by bacterial sinusitis.

Symptoms and signs include pain, proptosis, ophthalmoplegia, vision loss, papilloedema, and fever.

There is often pain in the eye and forehead - ophthalmic division of V may be affected, exophthalmos and occasionally, papilloedema are common and there could also be cranial nerve palsies - III, IV, VI. Pregnancy is a risk factor for venous sinus thrombosis, and cavernous sinus thrombosis is included in this category. Treatment is with antibiotics for any underlying infection, and anticoagulation with heparin (controversial).



## [ Q: 2132 ] MRCPass - 2011 January

A 36-year-old male, had a splenectomy performed after medical treatment for immune thrombocytopenic purpura failed. At present, he is asymptomatic and wants to know if any further action is necessary for the future. He is concerned about infections.

*Which one of the following organisms is he susceptible to?*

- 1- E coli
- 2- Enterococcus
- 3- Klebsiella
- 4- Pneumococcus
- 5- Legionella

## Answer &amp; Comments

Answer: 4- Pneumococcus

Although any encapsulated organism can cause infection post splenectomy, pneumococcus (Strep. Pneumoniae) is the organism in more than 60% of cases. According to guidelines published in the Journal of Royal College of Physicians in 2002, the standard of care for postsplenectomy patients includes immunization with pneumococcal vaccine (pneumovax), H. influenza vaccine, and meningococcal vaccine within 2 weeks of splenectomy.



## [ Q: 2133 ] MRCPass - 2011 January

A 26 year old lady has been diagnosed with addison's disease and recently had developed secondary amenorrhoea as well as loss of libido.

*Which hormone deficiency is likely to lead to the loss of libido?*

- 1- Aldosterone
- 2- Cortisol
- 3- 17alpha OH progesterone
- 4- Dehydroepiandrosterone

## 5- Thyroid hormone

## Answer &amp; Comments

Answer: 4- Dehydroepiandrosterone

Addison's disease can lead to a deficiency of androgen hormones including testosterone, dehydroepiandrosterone (DHEA), and DHEA sulphate.

In women, androgens are produced in the adrenal glands and the ovaries. In women, adrenal androgens promote the development of secondary sex characteristics such as underarm and pubic hair.

These hormones may also be important for women's libido (sex drive).



## [ Q: 2134 ] MRCPass - 2011 January

A 21-year-old man without any significant past history presented to his physician with swelling of his hands and feet, progressive dyspnoea and weight gain in excess of 10 kg in the week prior to admission. He also noted decreased frequency and quantity of urine during this period. On examination he had a blood pressure of 180/80 mmHg, heart rate of 90 and respiratory rate of 16/min. There were no skin lesions or lymphadenopathy, and all pulses were palpable. There was 2+ pitting pedal in the upper and lower limbs. He was also found to be in acute renal impairment with a creatinine of 250. Urine dipstick showed proteinuria 4+. Blood tests results are as below :

sodium 135 mmol/l  
potassium 4.5 mmol/l  
urea 5 mmol/l  
creatinine 100 µmol/l  
ALT 32 (5-35) U/l  
AST 25 (1-31) U/l  
ALP 86 (20-120) U/l



Albumin 22 (37-49) g/l

Total cholesterol 12 (< 5) mmol/L

The patient has been commenced on prednisolone but remains hypertensive.

*What should be commenced?*

- 1- Rituximab
- 2- Azathioprine
- 3- Simvastatin
- 4- Ramipril
- 5- Penicillamine

#### Answer & Comments

**Answer:** 4- Ramipril

The patient has nephrotic syndrome as indicated with oedema, hypoalbuminaemia, proteinuria and hypercholesterolaemia.

This is likely to be associated with a glomerulopathy such as minimal change or membranous nephropathy.

Prednisolone is the main treatment. However, blood pressure control is also important with an ACE inhibitor to reduce disease progression and have an effect in reducing proteinuria in the long term.



[ Q: 2135 ] MRCPass - 2011 January

A 55 year old man has a long history of emphysema. He smoked 20 cigarettes a day till the age of 45 but has discontinued now. He had large bullae in the lung confirmed by CT scans. He was referred for bullectomy.

*Which one of the following is likely to occur after surgery?*

- 1- Increase in FEV1
- 2- Increase in intrathoracic gas volume
- 3- Decreased FEV1/FVC ratio
- 4- Decreased Vital capacity
- 5- Decreased DLCO

#### Answer & Comments

**Answer:** 1- Increase in FEV1

In patients with giant bullous emphysema, bullectomy is the treatment of choice.

Indeed, patients have reported early improvement of dyspnea, hypoxemia and hypercapnia usually improve. In addition, there is a rise in FEV1, FEV1/FVC ratio, and diffusing capacity of the lung for carbon monoxide (DLCO). The KCO (corrected diffusion capacity) should remain the same. The intrathoracic gas volume is decreased after bullectomy.



[ Q: 2136 ] MRCPass - 2011 January

A 42-year-old has a history of dry cough and fever for 2 months, and weight loss and night sweats for 1 month.

He had a history of hypertension and was on bendroflumethiazide. Several sputum samples were sent and results revealed numerous acid-fast bacilli. He was commenced on quadruple TB therapy. Two months later, the patient complained of significant joint pains all over the body.

*Which one of the following drugs is likely to cause this side effect?*

- 1- Rifampicin
- 2- Isoniazid
- 3- Pyrazinamide
- 4- Ethambutol
- 5- Bendroflumethiazide

#### Answer & Comments

**Answer:** 3- Pyrazinamide

The most common (approximately 1%) side effect of pyrazinamide is arthralgia.

Other side effects are hepatitis, vomiting and sideroblastic anaemia.



[ Q: 2137 ] MRCPass - 2011 January

A 55-year-old woman presents with weakness and pains in her limbs. She was prescribed simvastatin for hypercholesterolaemia 6 months ago. She has recently been taking fruit juices as her neighbour recommended it for health reasons.

On admission, she had muscle weakness and a raised serum creatine kinase of 8000 IU/l. There was return of muscle enzymes to normal shortly after stopping simvastatin.

*What substance was likely to have interacted with simvastatin to cause rhabdomyolysis?*

- 1- Cranberry juice
- 2- Apple juice
- 3- Grapefruit juice
- 4- Blackcurrant juice
- 5- Orange juice

#### Answer & Comments

Answer: 3- Grapefruit juice

Simvastatin and atorvastatin are all metabolized by CYP3A4 enzyme and have the potential to interact with CYP3A4 substrates and inhibitors.

Commonly quoted inhibitors include erythromycin /clarithromycin, fluoxetine, cyclosporine and grapefruit juice.

Consumption of grapefruit juice inhibits the metabolism of statins-furanocoumarins in grapefruit juice inhibit the cytochrome P450 enzyme CYP3A4, which is involved in the metabolism of most statins and some other medications (it had been thought that flavonoids were responsible). This increases the levels of the statin, increasing the risk of dose-related adverse effects (including myopathy/rhabdomyolysis).



[ Q: 2138 ] MRCPass - 2011 January

A 51-year-old man has a sudden attack of ataxia and weakness which required admission. He has a history hypertension and diabetes. He was a non-smoker and rarely drank alcohol.

On examination, he had a left Horner's syndrome with horizontal nystagmus, absent left gag reflex. His speech was dysarthric. There was also dysidiadochokinesia of the left arm and leg and normal motor strength. Upon sensory examination, there was decreased pinprick sensation over the left side of the face and entire right side of the body.

*What is the most likely diagnosis?*

- 1- Multiple sclerosis
- 2- Brown sequard syndrome
- 3- Anterior spinal artery thrombosis
- 4- Pontine infarct
- 5- Posterior inferior cerebellar artery infarct

#### Answer & Comments

Answer: 5- Posterior inferior cerebellar artery infarct

Lateral Medullary Syndrome (Wallenberg's syndrome) is of an infarct of the posterior inferior cerebellar artery (or basilar artery).

The clinical features of lateral medullary syndrome can be divided into those resulting from brainstem or cerebellar dysfunction:

Cerebellar features:

- ipsilateral limb ataxia
- nystagmus to the side of the lesion

Brain stem features:

- sudden onset of dizziness and vomiting
- dysphagia and dysarthria
- ipsilateral Horner's syndrome

- ipsilateral facial sensory loss - pain and temperature
- ipsilateral pharyngeal and laryngeal paralysis - cranial IX and X palsies
- contralateral sensory loss - pain and temperature of the limbs and trunk



[ Q: 2139 ] MRCPass - 2011 January

A 45 year old patient has end stage renal failure. He has haemodialysis 3 times a week at the renal unit. He has become unwell over 24 hours ago with erythematous line insertion site. His blood pressure is 90/60 mmHg and he has a temperature of 39 C. Dialysis line infection was suspected. Blood cultures were taken but results are not available yet.

*Which antibiotic should be commenced?*

- 1- Amoxicillin
- 2- Gentamicin
- 3- Vancomycin
- 4- Linezolid
- 5- Teicoplanin

#### Answer & Comments

Answer: 3- Vancomycin

The likely organism is staphylococcus aureus causing dialysis line infection.

In renal dialysis patients who are ill, vancomycin should be started first as there is a possibility of MRSA infection. If the blood cultures subsequently grow staph aureus which are sensitive to methicillin then the antibiotic can be changed to flucloxacillin to complete a longer course of treatment eg. 2 weeks.



[ Q: 2140 ] MRCPass - 2011 January

A 19 year old female has a several

day history of urethral discharge. Mid stream urine is negative. A swab was sent and was it positive for chlamydia.

*Which one of the following should be prescribed?*

- 1- Penicillin V
- 2- Trimethoprim
- 3- Metronidazole
- 4- Doxycycline
- 5- Ciprofloxacin

#### Answer & Comments

Answer: 4- Doxycycline

The diagnosis is non gonococcal urethritis.

This is commonly due to Chlamydia. Treatment of choice is doxycycline.



[ Q: 2141 ] MRCPass - 2011 January

A 70 year man presents with complaints of visual changes. He is a type II diabetic with a history of autonomic neuropathy, hypertension and atrial fibrillation. There is a history of sexual dysfunction. Recently, he has been put on sildenafil.

*Which one of these is a recognised side effect?*

- 1- Retinitis pigmentosa
- 2- Optic neuritis
- 3- Tunnel vision
- 4- Nystagmus
- 5- Bluish vision

#### Answer & Comments

Answer: 5- Bluish vision

Some sildenafil users have complained of seeing everything tinted blue (cyanopsia).

Other most common side effects of sildenafil use include headache, flushing, dyspepsia, nasal congestion and impaired vision,

including photophobia and blurred vision. Digoxin causes yellow discolouration of vision (xanthopsia).



[ Q: 2142 ] MRCPass - 2011 January

A 36 year old lady has recently presented with weight loss and anaemia. Investigations confirmed that she had colon carcinoma. Upon review, she said she that both her parents had colon carcinoma. She enquires about risks of other cancers.

*Which one of the following is she most at risk of developing?*

- 1- Pancreatic carcinoma
- 2- Endometrial carcinoma
- 3- Small cell carcinoma of the lung
- 4- Squamous cell carcinoma of the lung
- 5- Breast carcinoma

#### Answer & Comments

Answer: 2- Endometrial carcinoma

The case scenario refers to the patient having Hereditary nonpolyposis colorectal cancer (HNPCC) is an autosomal dominant condition.

Associated conditions apart from which has colon cancer are cancers of the endometrium, ovary, stomach, hepatobiliary tract and urinary tract. Women with HNPCC have a 80% lifetime risk of endometrial cancer. The average age of diagnosis of endometrial cancer is about 46 years.



[ Q: 2143 ] MRCPass - 2011 January

A 71 year old woman has been referred for management of a blood pressure of 190/100 mmHg. She has a history of bipolar disorder and peripheral vascular disease. She is currently on aspirin and lithium.

*Which one of the following is the best antihypertensive agent to commence?*

- 1- Valsartan

- 2- Lisinopril
- 3- Amlodipine
- 4- Atenolol
- 5- Doxazosin

#### Answer & Comments

Answer: 3- Amlodipine

According to the British Hypertension Society guidelines, Patients who are > 55 in age or black should be on either a calcium channel blocker (C) or thiazide diuretic (D).

Amlodipine is a calcium channel blocker hence the best option here. Both thiazides and ACE inhibitors can increase lithium concentration levels.



[ Q: 2144 ] MRCPass - 2011 January

A 50 year old man presents with severe crushing chest pains. His ECG showed dominant R waves in V1 and V2 leads. The T waves were also tall.

*Which artery is most likely to be occluded?*

- 1- Right coronary artery
- 2- Septal branch of left anterior descending artery
- 3- Circumflex artery
- 4- Posterior descending artery
- 5- Left main artery

#### Answer & Comments

Answer: 3- Circumflex artery

Posterior myocardial infarction usually results from occlusion of the left circumflex coronary artery but the anatomy can vary a little.

Occlusion of the right coronary artery may also result in a posterior MI.

The changes of posterior myocardial infarction are seen indirectly in the anterior precordial leads. Leads V1 to V3 face the endocardial

surface of the posterior wall of the left ventricle. As these leads record from the opposite side of the heart instead of directly over the infarct, the changes of posterior infarction are reversed in these leads. The R waves increase in size, becoming broader and dominant, and are associated with ST depression and upright T waves.



[ Q: 2145 ] MRCPass - 2011 January

A 35-year old man was referred with a two-month history of generalised weakness, fever, and weight loss.

There was no other relevant past medical history. Physical examination revealed a moderately wasted young man with severe pallor and pyrexia of 39°C. The spleen was palpable 6 cm below the left costal margin.

Blood results showed:

Hb was 9 g/dl

haematocrit was 18%

white cell count  $5.3 \times 10^9/l$

platelet count was  $89 \times 10^9/l$

His reticulocyte count was <0.0001%.

There were some tear drop erythrocytes in his blood film with 4 normoblasts per 100 leucocytes interspersed by myelocytes. The bone marrow biopsy showed replacement of normal haemopoietic elements by early fibrosis.

*What is the likely diagnosis?*

- 1- Chronic myeloid leukaemia
- 2- Essential thrombocythaemia
- 3- Myelofibrosis
- 4- Multiple myeloma
- 5- Waldenstrom's macroglobulinaemia

#### Answer & Comments

Answer: 3- Myelofibrosis

Myelofibrosis is a chronic, progressive myeloproliferative disease.

It is characterised by prominent bone marrow stromal reaction including collagen fibrosis and osteosclerosis.

Clinical features include lethargy, constitutional symptoms, transfusion dependent anaemia, splenomegaly, tear drop poikilocytosis, and a leucoerythroblastic blood film. A leucoerythroblastic picture on blood film is commonly seen in conditions with marrow infiltration. Immature cells (myelocytes and normoblasts) are also seen on the blood film.



[ Q: 2146 ] MRCPass - 2011 January

A 55-year-old woman presents for evaluation of a chronic cough, productive of very thick, yellow sputum that sometimes becomes blood-tinged. She has experienced recurrent episodes of fever associated with pleuritic chest pain. Over the last 5 years, she has developed shortness of breath with exertion. A CT scan was performed and it revealed that she had bronchiectasis. A recent result for sputum culture sent by the GP showed the presence of pseudomonas, although sensitivities are not known.

*What antibiotic should be commenced?*

- 1- Amoxicillin
- 2- Clarithromycin
- 3- Cephadrine
- 4- Ciprofloxacin
- 5- Vancomycin

#### Answer & Comments

Answer: 4- Ciprofloxacin

Bronchiectasis is an uncommon condition that is characterized by irreversible dilation of the bronchi.

Chronic pulmonary infections and airway inflammation cause bronchial damage through destruction of the muscular and elastic layer of the bronchial wall, leading to bronchiectasis. Antimicrobial therapy should target the following common pathogens depending on the patient specific risk factors: Haemophilus influenza, Pseudomonas aeruginosa, Staphylococcus aureus, and Streptococcus pneumoniae.

P. aeruginosa usually becomes a chronic infection and is rarely eradicated, despite the use of intravenous antibiotic therapy. Fluoroquinolones such as ciprofloxacin or levofloxacin are reasonable outpatient antibiotics in patients with severe symptoms for 7-14 days. Other antibiotics which are effective are gentamicin, tobramycin and ceftazidime.



[ Q: 2147 ] MRCPass - 2011 January

A 25 year old lady returned from Indonesia 2 weeks ago and now feels unwell. Whilst she was there she was bitten by mosquitos. She is lethargic, has significant myalgia and complained of fevers. Her temperature was 39.6 C and her blood pressure was 85 / 60 mmHg . There was a generalized petechial rash in the lower part of the body. Blood tests showed raised inflammatory markers and a malarial film was negative on admission.

*What treatment should be commenced?*

- 1- Morphine
- 2- Intravenous quinine
- 3- Intravenous fluids
- 4- Intravenous ceftriaxone
- 5- Intravenous prednisolone

#### Answer & Comments

Answer: 3- Intravenous fluids

This patient is likely to have dengue fever, as she has just returned from South East Asia.

She also exhibits features of a purpuric rash, myalgia, fevers (and also frequently a thrombocytopenia). Treatment is supportive, as the disease is self limiting.



[ Q: 2148 ] MRCPass - 2011 January

A 20 year old man was referred for pink discolouration of his urine to the hospital. He had no previous relevant medical history. 3 days ago he complained of a sore throat and was given a course of amoxicillin and ibuprofen by the GP but those symptoms have resolved now . On examination, he looked well. His blood pressure was 120/70 mmHg, temperature 36 C. There were normal abdominal examination and he had no palpable organomegaly. Urine dipstick showed blood ++, Protein +, nitrites negative.

*What is the most likely diagnosis?*

- 1- Crescentic glomerulonephritis
- 2- Wegener's granulomatosis
- 3- IgA nephropathy
- 4- Post streptococcal glomerulonephritis
- 5- Goodpasture's syndrome

#### Answer & Comments

Answer: 3- IgA nephropathy

IgA nephropathy is the most common glomerulonephritis and is characterized by deposition of the IgA antibody in the glomerulus.

The classic presentation (in 40-50% of the cases) is episodic frank hematuria which usually starts within a day or two of a non-specific upper respiratory tract infection. The common differential is post-streptococcal glomerulonephritis which typically occurs weeks after initial infection. The gross hematuria resolves after a few days, though microscopic hematuria may persist. Renal function usually remains normal. Mild proteinuria can also be associated.





[ Q: 2149 ] MRCPass - 2011 January

A 50 year old man with heartburn was referred by the GP for endoscopy. He has had the endoscopy done, it showed Barrett's oesophagus. A histology specimen showed that there was no H pylori infection and dysplastic features.

*What should be done next?*

- 1- No medication required
- 2- Start triple therapy
- 3- Start PPI and discharge
- 4- Start PPI and follow up with repeat endoscopy in 2 years
- 5- Start PPI and repeat endoscopy in 8 weeks

#### Answer & Comments

Answer: 5- Start PPI and repeat endoscopy in 8 weeks

Barrett's oesophagus (columnar-lined oesophagus[CLO] ) is an oesophagus in which any portion of the normal squamous lining has been replaced by a metaplastic columnar epithelium which is visible macroscopically.

CLO represents the extreme end of the pathophysiological spectrum of gastro-oesophageal reflux disease.

If the endoscopy shows no dysplastic features, surveillance should be discussed with the patient and it is recommended that it should be performed every 2 years.

If there were features of dysplasia, then the patient should be managed firstly by extensive re-biopsy after intensive acid suppression for 8-12 weeks. If the features of dysplasia persist, surveillance should be six monthly and if the features progress surgery may be recommended.



[ Q: 2150 ] MRCPass - 2011 January

A 62 year old woman presents with confusion, headache and neck stiffness. She

has a temperature of 38.5C. A lumbar puncture was performed. Results showed:

CSF pressure: 12 cm

glucose - 3.7 mmol/l

protein < 0.55 g/l

white cells 290 (95% lymphocytes)

An MRI scan showed high signal in the temporal lobes including hippocampal formations and parahippocampal gyrae and right inferior frontal gyrus.

*What is the likely diagnosis?*

- 1- Pneumococcal meningitis
- 2- Guillain Barre syndrome
- 3- TB meningitis
- 4- Poliomyelitis
- 5- Herpes simplex virus encephalitis

#### Answer & Comments

Answer: 5- Herpes simplex virus encephalitis

In Herpes simplex virus (HSV) encephalitis, a presentation with fevers, confusion or a change in personality is common.

The CSF white cell count is elevated with lymphocytosis. The majority of cases of herpes encephalitis are caused by herpes simplex virus-1 (HSV-1) . The MRI typically shows high signal changes in the T2 weighted images in the temporal lobe areas, in HSV encephalitis. Treatment is with iv acyclovir.



[ Q: 2151 ] MRCPass - 2011 January

A 45-year-old woman presents with weight gain and recurrent 'dizzy' episodes. Over the past four months she has gained 10 kg. The episodes occur on an almost daily basis and are characterised by blurred vision, sweating and headaches. Her GP checked a blood sugar during one of these episodes which was record as being 2.0 mmol/l.

*What is the most useful test to confirm the diagnosis?*

- 1- Insulin tolerance test
- 2- Oral glucose tolerance test
- 3- 72 hour fast with Insulin + C-peptide levels
- 4- Sulphonylurea level
- 5- Thyroid function

#### Answer & Comments

Answer: 3- 72 hour fast with Insulin + C-peptide levels

A 72-hour fast, usually supervised in a hospital setting, measuring any hypoglycaemia (glucose <2.5 mmol/l), insulin and C peptide level (which are elevated during one of these episodes) will confirm the diagnosis of a possible insulinoma (pancreatic insulin secreting tumour as suggested in the clinical history).

The C peptide levels are useful as proinsulin is broken down to insulin and C peptide.

If present, then the patient is unlikely to be injecting insulin exogenously (which is among the possibilities in patients with unexplained hypoglycaemic episodes).



[ Q: 2152 ] MRCPass - 2011 January

A 60 year old woman presents with a four-year history of increasing stiffness and immobility which have led to multiple falls. She had had some difficulty in fine finger movement. Her Blood pressure was 130/90 mmHg lying and 135/95 mmHg standing. Examination showed a mask like facies, bradykinesia, nuchal and limb rigidity. She had an asymmetrical tremor in her hands and cogwheel rigidity in the arms. There was also short-term memory loss.

*Which one of the following features most likely suggests Parkinson's disease?*

- 1- Flaccidity

- 2- Asymmetrical bradykinesia
- 3- Intention tremor
- 4- Ataxic gait
- 5- Sensory ataxia

#### Answer & Comments

Answer: 2- Asymmetrical bradykinesia

Idiopathic Parkinson's disease is characterised by tremor, rigidity and bradykinesia (which is typically asymmetrical).

There are also features of postural instability, a mask like face and a shuffling gait.



[ Q: 2153 ] MRCPass - 2011 January

A 70 year old lady presents with visual problems.

On examination, she had a homonymous superior left homonymous quadrantanopia.

*What is the likely site of lesion?*

- 1- Frontal lobe
- 2- Parietal lobe
- 3- Occipital lobe
- 4- Temporal lobe
- 5- Cerebellum

#### Answer & Comments

Answer: 4- Temporal lobe

Inferior quadrantanopia is a sign of a parietal lobe lesion, whilst a superior quadrantanopia is a sign of a temporal lobe lesion.



[ Q: 2154 ] MRCPass - 2011 January

A 35 year old man was found to have a heart murmur on a routine check up and his GP refers him to the general medical clinic.

He has a past medical history of asthma. On examination, blood pressure was 110/ 60 mm Hg. The JVP is not elevated. Cardiac auscultation evidenced a grade III pansystolic

murmur at both the cardiac apex and left sternal border. A thrill was palpable at the left parasternal area.

*What is the likely diagnosis?*

- 1- Mitral regurgitation
- 2- Aortic stenosis
- 3- Tricuspid regurgitation
- 4- Atrial septal defect
- 5- Ventricular septal defect

#### Answer & Comments

**Answer:** 5- Ventricular septal defect

A small VSD could present with few symptoms until a heart murmur is picked up.

A palpable thrill and pan systolic murmur in the left parasternal region is typical.



[ Q: 2155 ] MRCPass - 2011 January

A 25 year old woman presents with irritability, diarrhoea, weight loss and palpitations. She has no past medical history and is currently not taking medications. She has a family history of her maternal uncle having primary hyperparathyroidism at the age of 35 yrs and his son also had a similar diagnosis. On examination, her BP is 190 / 110 mmHg. She had palpable thyroid nodules. Her blood results are:

sodium 135 mmol/l, potassium 4.3 mmol/l, urea 5 mmol/l, creatinine 100 µmol/l, calcium 3.2 (2.25-2.7) mmol/l, phosphate 0.7 (0.8-8) pmol/l, free T4 18 (10-24) pmol/l, TSH 3.2 (0.3-4) mU/l.

*Which one of the following thyroid conditions is associated?*

- 1- Papillary thyroid carcinoma
- 2- Medullary thyroid carcinoma
- 3- Hashimoto's disease
- 4- Grave's disease
- 5- Iodine deficiency

#### Answer & Comments

**Answer:** 2- Medullary thyroid carcinoma

This lady has hypertension and thyroid nodules.

The symptoms and hypertension suggest an underlying pheochromocytoma. The thyroid nodules with normal thyroid function tests is consistent with multiple endocrine neoplasia (MEN), in this case type 2 fits where the patient may have medullary thyroid carcinoma.

MEN 1 associations are: pituitary tumour, parathyroid hyperplasia/tumour, pancreatic tumours (most commonly gastrinoma / insulinoma).

MEN 2a is associated with medullary thyroid carcinoma (MTC), parathyroid tumours (10-20%) and pheochromocytoma (20-50%).

MEN 2b is associated with presentation of medullary thyroid carcinoma, parathyroid tumours and pheochromocytoma + ganglioneuromatosis (pathognomonic).



[ Q: 2156 ] MRCPass - 2011 January

A 30 year old lady has severe bleeding gums for 6 months and is referred to a haematologist who organised the following tests with these results:

Hemoglobin 12 g/dl (10.5-13.5)

Hematocrit 37% (33.0-39.0)

WBC  $7.9 \times 10^9/L$  (6.0-17.5)

Platelets  $330 \times 10^9/L$  (156-369)

PT 11.3 s (10.0-12.8)

APTT 49s (28.0-38.0)

FACTOR VIII 0.15 U/ml (0.60-1.50)

FACTOR IX 0.82 U/ml (0.60-1.50)

THROMBIN TIME 18s (16.0-22.0)

RCOF <0.10 U/ml (0.50-1.50)

*What is the diagnosis?*

- 1- Hemophilia A
- 2- Hemophilia B
- 3- Von Willebrand's disease
- 4- DDAVP deficiency
- 5- Factor V leiden deficiency

#### Answer & Comments

Answer: 3- Von Willebrand's disease

Von Willebrand's disease is caused by congenital deficiency (or dysfunction) of vWF, a protein cofactor essential for normal platelet adhesion and for the transport of Factor VIII.

Bleeding time is prolonged, platelets show reduced adhesion and levels of Factor VIII are low. Inheritance is usually autosomal dominant, but in the severe forms it may be recessive.

The disease is phenotypically classified into three broad categories:

Type 1 (partial quantitative deficiency, most common type)

Type 2 (qualitative defect)

Type 3 (total deficiency)

Useful tests for diagnosing von Willebrand's Disease are:

increased template bleeding time

low factor VIII level (vWF protect FVIII from degradation)

reduced levels of vWF: Antigen ristocetin cofactor activity RCOF - ristocetin fails to induce platelet aggregation (because of lack of vWF:R - a cofactor for ristocetin)



[ Q: 2157 ] MRCPass - 2011 January

A 72-year-old male presents to the emergency department with sudden-onset, diffuse abdominal pain that began 18 hours ago. He has not been vomiting, but he has had several episodes of diarrhoea, the last of

which was bloody. Ischaemic colitis was diagnosed following a surgical review.

*Where is the most common site for the condition?*

- 1- Hepatic flexure
- 2- Splenic flexure
- 3- Caecum
- 4- Sigmoid
- 5- Rectum

#### Answer & Comments

Answer: 2- Splenic flexure

The colon receives blood from both the superior and inferior mesenteric arteries.

The blood supply from these two major arteries overlap, with abundant collateral circulation. However, there are weak points, or "watershed" areas, at the borders of the territory supplied by each of these arteries, such as the splenic flexure and the transverse portion of the colon. These watershed areas are most vulnerable to ischemia, thus leading to ischaemic colitis.



[ Q: 2158 ] MRCPass - 2011 January

*Which one of the hormones listed below is under a state of continuous inhibition?*

- 1- Prolactin
- 2- Growth hormone
- 3- Adrenocorticotrophic hormone (ACTH)
- 4- Thyroid stimulating hormone (TSH)
- 5- Anti diuretic hormone (ADH)

#### Answer & Comments

Answer: 1- Prolactin

Prolactin release from the pituitary is inhibited (under negative control) by dopamine (from hypothalamus). Dopamine produced by neurons in the hypothalamus is secreted into

the hypothalamo-hypophysial blood vessels which supply the pituitary gland.

The lactotrope cells that produce prolactin and in the absence of dopamine, would secrete prolactin continuously.



[ Q: 2159 ] MRCPass - 2011 January

A 48 year old man is known to have alcoholic liver cirrhosis. He drinks 60 units of alcohol per week. He presents unwell and complains of abdominal distension and abdominal pain. Temperature is 38 C and blood pressure is 96/50 mmHg. Abdominal palpation reveals hepatomegaly and ascites with shifting dullness.

*What should be done next?*

- 1- Albumin infusion
- 2- Ascitic fluid cytology
- 3- Ascitic fluid microscopy
- 4- Liver biopsy
- 5- ultrasound of the abdomen

#### Answer & Comments

**Answer:** 3- Ascitic fluid microscopy

There is a high chance of spontaneous bacterial peritonitis (SBP) in this patient with cirrhotic liver disease.

When analysis of ascitic fluid reveals a white blood cell count of more than 250 cells/cc, SBP is likely. Cefotaxime should be commenced after a tap is done and blood cultures are sent.



[ Q: 2160 ] MRCPass - 2011 January

A 30-year-old man presented with a pruritic rash, which he has had for 3 months. The rash is present on the arm, elbows, buttocks and thigh. He has no significant past medical history but mentioned that he had frequent episodes of loose stool which he had accepted was normal for him. The GP

prescribed betnovate creams which have not helped the lesions. On examination, he was noted to have many papular, vesicular lesions, of average 0.5 cm each.

*What is the likely diagnosis?*

- 1- Erythema marginatum
- 2- Erythema multiforme
- 3- Guttate psoriasis
- 4- Dermatitis herpetiformis
- 5- Pityriasis versicolor

#### Answer & Comments

**Answer:** 4- Dermatitis herpetiformis

Dermatitis herpetiformis is characterized by intensely itchy chronic papulovesicular eruptions, usually distributed symmetrically on extensor surfaces (buttocks, back of neck, scalp, elbows, knees, back). Dermatitis herpetiformis

symptoms typically first appear in the early years of adulthood between 20 and 30 years of age. There is a strong association with gluten intolerance (celiac disease)

Diagnosis is confirmed by a skin biopsy which reveals IgA deposits in the dermal papillae, revealed by direct immunofluorescence. Dapsone is an effective treatment for most patients. A gluten free diet also often leads to symptom improvement.



[ Q: 2161 ] MRCPass - 2011 January

A 32 year old man complained of severe pain in the feet which are burning and painful typically at night. He has type 1 diabetes and is on lantus and novorapid insulin. He has poor glycaemic control and a HbA1c of 9.5 %. He took diclofenac but the pain was not relieved completely.

*What is the best treatment for this man?*

- 1- Physiotherapy
- 2- Gabapentin

- 3- Morphine
- 4- Fluoxetine
- 5- Bed rest

#### Answer & Comments

Answer: 2- Gabapentin

This patient has peripheral neuropathy causing pain.

Although they can provide real relief, NSAIDs have a "ceiling effect" - that is, there's a limit to how much pain they can control.

Neuropathic agents such as tricyclic antidepressants (nortriptyline or amitriptyline) anticonvulsant drugs, such as gabapentin, also may be prescribed for chronic pain. They may help by blocking pain messages to the brain or by enhancing the production of endorphins, body's natural painkillers.



[ Q: 2162 ] MRCPass - 2011 January

A 65-year-old white man was referred following several significant episodes of epistaxis. Physical examination demonstrated no lymphadenopathy, no bruises, and no purpura. His liver was palpated 1 cm below the right costal margin. The spleen was not palpable.

Blood tests results showed:

hemoglobin level of 9 g/dL

mean corpuscular volume,  $84 \times 10^{-15}$  L (80-96)

white blood cell count,  $10 \times 10^3/\mu\text{L}$

platelets,  $900 \times 10^3/\mu\text{L}$ .

Bone marrow biopsy showed marked megakaryocytic hyperplasia, morphologically abnormal megakaryocytes with nuclear pleomorphism, and clustering of megakaryocytes

A diagnosis of essential thrombocythemia was suspected.

*What drug should be commenced?*

- 1- Hydroxyurea
- 2- Aspirin
- 3- Intravenous immunoglobulin
- 4- Abxici-mab
- 5- Prednisolone

#### Answer & Comments

Answer: 1- Hydroxyurea

Essential thrombocythemia is a chronic myeloproliferative disorder characterized by sustained thrombocytosis in the blood (peripheral blood platelet count greater than  $600 \times 10^9/\text{L}$ ) and increased numbers of large, mature megakaryocytes in the bone marrow.

In some cases this disorder may be progressive, and rarely may evolve into acute myeloid leukemia or myelofibrosis. Not all patients will require treatment at presentation. In those who are at increased risk of thrombosis or bleeding (older age, prior history of bleeding or thrombosis, or very high platelet count), reduction of the platelet count to the normal range can be achieved using hydroxyurea (also known as hydroxycarbamide), interferon- $\gamma$  or anagrelide (phosphodiesterase inhibitor). Low-dose aspirin is also widely used to reduce the risk of thrombosis.



[ Q: 2163 ] MRCPass - 2011 January

A 26 year old lady presents with abdominal pains and lethargy. She has a history of diabetes and was on insulin.

Clinical examination was unremarkable and she had an abdominal X ray which showed the presence of renal calculi.

Investigations revealed the following:

arterial blood pH 7.30 (7.38-7.44)

serum bicarbonate 12.6 mmol/L (21-28 mmol/L)

sodium 146 (136-145 mmol/L)



potassium 2.8 (3.5-5mmol/L)

chloride 122 (98-106mmol/L)

Anion gap was 15 (normal 7-16 mmol/L)

Urine pH of 6.5 (normal range 5-9)

*What is the likely diagnosis?*

- 1- Multiple myeloma
- 2- Renal tubular acidosis type 1
- 3- Nephrotic syndrome
- 4- Homocystinuria
- 5- Porphyrria

#### Answer & Comments

Answer: 2- Renal tubular acidosis type 1

The diagnosis of Type 1 RTA is based on the findings of metabolic acidosis, low bicarbonate, -hypokalemia, a normal anion gap (the anion gap here is  $\text{Na} + \text{K} - \text{Cl} - \text{HCO}_3 = 14.6$  which is normal) and relatively alkaline urine despite the acidosis.

Type 1 RTA can be familial with autosomal dominant as the most common mode of inheritance.

Typical features of type 1 RTA are osteomalacia and nephrocalcinosis. Associated causes are Sjogren's syndrome, SLE, rheumatoid arthritis, renal transplantation and sickle cell anaemia.

Type II RTA is associated with disorders such as cystinosis, galactosaemia, Wilson's disease, multiple myeloma and Paroxysmal nocturnal haemoglobinuria. The distal intercalated cells function normally, so the acidemia is less severe than dRTA and the urine can acidify to a pH of less than 5.3.



[ Q: 2164 ] MRCPass - 2011 January

A 35 year old man presented with severe retrosternal chest pain. He has history of frequent cocaine use. His blood pressure is 200/110 mmHg and his ECG shows anterior

wall myocardial infarction with ST elevation in leads V1 to V4. He has been given Aspirin by the ambulance crew.

*What is the likely cause of the presentation?*

- 1- Atherosclerosis
- 2- Vasculitis
- 3- Coronary vasospasm
- 4- Cardiac arrhythmia
- 5- Vessel thrombosis

#### Answer & Comments

Answer: 3- Coronary vasospasm

This man has cocaine induced coronary vasospasm.

Whilst this is frequently transient and can be relieved by vasodilators, it can lead to an ST elevation myocardial infarction. Thrombolytics and anticoagulation will be of minimal effect as it is not a thrombotic event like most other myocardial infarction cases.



[ Q: 2165 ] MRCPass - 2011 January

A 32 year old woman has presented with symptoms of haemoptysis for 6 months. Urine dipstick showed blood ++ and she was noted to have renal impairment with a creatinine of 160  $\mu\text{mol/l}$ . A Chest XR showed upper lobe infiltrates. A renal biopsy was performed, and this showed crescentic accumulation of cells, deposition of IgG in glomerular basement membrane and extracellular material in the urinary space of a glomeruli.

*Which one of the following tests is likely to be positive?*

- 1- Anti centromere antibody
- 2- P ANCA
- 3- C ANCA
- 4- Anti smooth muscle antibody
- 5- Anti GBM antibody

## Answer &amp; Comments

Answer: 5- Anti GBM antibody

A patient with pulmonary haemorrhage and crescentic glomerulonephritis (anti GBM positive) or microscopic polyangitis (p ANCA positive and anti myeloperoxidase antibody positive).

In Goodpasture's syndrome, the renal biopsy typically shows linear IgG deposition along the basement membrane. If the patient had a wheeze and eosinophilia, then the description fits a patient with Churg Strauss syndrome (also anti myeloperoxidase antibody positive).



[ Q: 2166 ] MRCPass - 2011 January

A 52-year-old man presented with an insidious 12-month history of a sensation of food getting stuck in his throat, and regurgitation of small amounts of previously eaten food, some hours after a meal. He also mentioned that his family mentioned significant halitosis. He said he had lost 1 stone over the last year. On examination, he had a normal oral cavity and swallowing ability, but halitosis was noted.

*What is the likely diagnosis?*

- 1- Gastroesophageal reflux
- 2- Pharyngeal pouch
- 3- Oesophageal adenocarcinoma
- 4- Hiatus hernia
- 5- Gastric ulcer

## Answer &amp; Comments

Answer: 2- Pharyngeal pouch

A pharyngeal pouch is a pulsion diverticulum of the pharyngeal mucosa through a weakening between the cricopharyngeus and thyropharyngeus muscles at the top of the oesophagus.

The pressure generated by swallowing can over time result in an out-pouching of the

underlying mucosa through this weakness in the muscles.

The most common clinical findings of a pharyngeal pouch include dysphagia, or the feeling of a lump in the throat.

Regurgitation of food and mucus a few hours after eating may occur, in addition to halitosis as a result of food being trapped in the pouch.



[ Q: 2167 ] MRCPass - 2011 January

A 61 year old man presents with bradykinesia and mask like facies. He was found to have cogwheeling and bradykinesia. His gait is shuffling in nature.

*Which one of the following drugs is most likely to help the bradykinesia?*

- 1- Amantadine
- 2- Benhexol
- 3- Bromocriptine
- 4- Levodopa
- 5- Selegiline

## Answer &amp; Comments

Answer: 4- Levodopa

The primary pathology in Parkinson's disease is loss of dopaminergic action in the substantia nigra, leading to rigidity, bradykinesia and tremors.

Bradykinesia results from a failure of basal ganglia output to reinforce the cortical mechanisms that prepare and execute the commands to move. The first line treatment is with L-dopa which is the metabolic precursor of L-dopa. Benhexol is an anticholinergic drug (used to alleviate tremors in parkinson's disease), and is not effective against bradykinesia.

Dopamine agonists (bromocriptine) and MAO inhibitors (selegiline) are used as adjuncts to patients who have motor fluctuations on L-dopa.



[ Q: 2168 ] MRCPass - 2011 January

A 40 year old lady has had a renal transplant 4 years ago. She has end stage renal failure due to diabetes and hypertension. She is on the following medications: tacrolimus, azathioprine, prednisolone, lansoprazole and insulin novomix. Her baseline creatinine has been 100 for the last two years. She came to clinic for blood tests which show these results:

Hb 11.0 g/dl, WCC  $12 \times 10^9/l$ , platelets  $250 \times 10^9/l$

sodium 136 mmol/l, potassium 6.6 mmol/l

urea 6 mmol/l

creatinine 105  $\mu\text{mol/l}$

*What is the likely cause of hyperkalaemia?*

- 1- Tacrolimus
- 2- Azathioprine
- 3- Prednisolone
- 4- Lansoprazole
- 5- Insulin

#### Answer & Comments

Answer: 1- Tacrolimus

Tacrolimus suppresses renin release, leading to decreased aldosterone synthesis and decreased potassium secretion in collecting duct leading to hyperkalaemia.



[ Q: 2169 ] MRCPass - 2011 January

A 25 year old woman has a history of recurrent urinary tract infection as a child.

Her mother has a history of hypertension and was told that her kidneys were 'damaged'. An ultrasound of the patient showed scarring in both kidneys.

*What is the most likely diagnosis?*

- 1- Autosomal dominant polycystic kidney disease
- 2- Reflux nephropathy

3- Renal cell carcinoma

4- Diabetic nephropathy

5- IgA nephropathy

#### Answer & Comments

Answer: 2- Reflux nephropathy

Urine reflux is the most common cause of chronic pyelonephritis and can lead to nephropathy.

The risk factors include a personal or family history of reflux. Ultrasound can identify renal scarring if the degree is moderate to severe.



[ Q: 2170 ] MRCPass - 2011 January

A 30 year old patient has been diagnosed as having likely breast cancer on a mammogram.

*Which one of the following blood tests is useful as a prognostic marker for this patient?*

- 1- Ca 125
- 2- Ca 19-9
- 3- Ca 15-3
- 4- Alpha feto protein
- 5- Human Chorionic Gonadotrophin

#### Answer & Comments

Answer: 3- Ca 15-3

CA 15-3 (also known as MUC1) is the most widely used serum marker in breast cancer.

Studies have shown that patients with high preoperative levels of CA 15-3 ( $>30.4 \text{ U/mL}$ ) had a worse outcome than patients with low levels of the marker.



[ Q: 2171 ] MRCPass - 2011 January

A 46-year-old male with no previous medical history was admitted to hospital with a severe, dull chest pain, radiating to both shoulders. The chest pain is worse with

inspiration. A few days before, he had suffered a minor cold. He was stable haemodynamically and cardiac examination showed a nondisplaced point of maximal intensity and normal S1 and S2. There were no extra heart sounds or cardiac murmurs. The ECG showed wide spread saddle shaped ST elevation. Full blood count, erythrocyte sedimentation rate, blood electrolytes and serum creatinine were normal. Troponin result was positive.

*What is the diagnosis?*

- 1- Myocardial infarction
- 2- Musculoskeletal chest pain
- 3- Pulmonary embolus
- 4- Costochondritis
- 5- Pericarditis

#### Answer & Comments

Answer: 5- Pericarditis

The diagnosis is acute pericarditis, which is likely to be due to a viral infection e.g. coxsackie virus. The mainstay of therapy is nonsteroidal anti-inflammatory drugs (NSAIDs). Aspirin, indomethacin, naproxen and diclofenac are examples. Corticosteroids should be reserved for patients whose symptoms are refractory to NSAID therapy.



[ Q: 2172 ] MRCPass - 2011 January

A 36-year-old woman presented with haemorrhage, peri-rectal bleeding and easy bruising. She has a history of chronic lymphocytic leukaemia and has been on Fludarabine, chlorambucil, cyclophosphamide and rituximab treatment. Physical examination revealed multiple bruises, right cervical lymphadenopathy, and hepatosplenomegaly. Laboratory data showed haemoglobin 5.9 g/dL, while blood cell count (WBC)  $92 \times 10^9/L$  with circulating blasts, and platelet count  $34 \times 10^9/L$ . Her blood group is O Rh Negative.

*What type of blood should be prescribed?*

- 1- Irradiated blood
- 2- Group A blood
- 3- Group B blood
- 4- Rh negative
- 5- CMV negative

#### Answer & Comments

Answer: 1- Irradiated blood

Irradiated blood reduces the risk of Grave versus Host disease, and is recommended for patients who have had stem cell transplantation or haematological malignancy with immunosuppression due to chemotherapy.

Patients with blood group O can only receive blood of Group O.



[ Q: 2173 ] MRCPass - 2011 January

A 22-year-old woman presents with a fall and was found at home. She had a past history of coronary artery bypass grafting, stroke and diabetes. Her usual drugs include ramipril, aspirin and atenolol. On admission, she had a blood pressure of 95/60 mmHg and temperature of 34 C. She was very weak and unable to get out of bed.

Cardiovascular, respiratory and abdominal examination were unremarkable. Urine dipstick shows protein ++, blood +++, white cells +.

*What test should be done?*

- 1- Magnesium
- 2- Creatine kinase
- 3- International normalised ratio
- 4- Troponin
- 5- Brain natriuretic peptide

#### Answer & Comments

Answer: 2- Creatine kinase

This patient is likely to have been on the floor due to weakness and may have rhabdomyolysis.

The urine dipstick may demonstrate blood, although the true test is of myoglobin levels. A significantly elevated creatine kinase enzyme would be a reasonable indicator of rhabdomyolysis, and the patient should be kept well hydrated.

Monitoring of renal function and urine output would be important.



[ Q: 2174 ] MRCPass - 2011 January

A 20 year old man has noticed some lesions around the genital area and seeks consultation. On examination, there are several papular lesions around the shaft of the penis and scrotum. Genital warts are confirmed as the diagnosis.

*What treatment should be offered?*

- 1- Augmentin
- 2- Podophyllotoxin
- 3- Acyclovir
- 4- Ketoconazole
- 5- Permethrin

#### Answer & Comments

Answer: 2- Podophyllotoxin

Genital warts are caused by human papillomavirus infection.

First-line treatment (0.15% cream) for soft warts in accessible sites, e.g. vaginal introitus, under foreskin include podophyllotoxin and cryotherapy.



[ Q: 2175 ] MRCPass - 2011 January

A 28 year old lady was prescribed carbimazole as she was diagnosed with Grave's disease.

*What is the mechanism of action of carbimazole?*

- 1- Thyroperoxidase enzyme inhibitor
- 2- Thyroid stimulating hormone inhibitor
- 3- Thyroxine binding action
- 4- Inhibits iodination of thyroxine
- 5- Inhibition of enzyme 5'-deiodinase

#### Answer & Comments

Answer: 4- Inhibits iodination of thyroxine

Carbimazole is an antithyroid agent that decreases the uptake and concentration of inorganic iodine by the thyroid.

It prevents the thyroid peroxidase enzyme from coupling and iodinating the tyrosine residues on thyroglobulin, hence reducing the production of the thyroid hormones T3 and T4.

Propylthiouracil inhibits the thyroperoxidase enzyme



## [ Q: 2176 ] MRCPass - 2011 May

A 46 year old lady presented to her physician with complaints of weakness and headaches for several months.

At presentation, she was found to have severe hypertension with blood pressure 190/110 mmHg.

Blood results are:

sodium 149 mmol/l

potassium 2.9 mmol/l

urea 7 mmol/l

creatinine 100 µmol/l

Renin 4.1 ng/L (13.6 - 70)

Plasma aldosterone 2170 pmol/L (110-800)

Urine Adrenaline 52 (<80 nmol/24 hours)

Urine Noradrenaline 650 (<780 nmol/24 hours)

Urine Dopamine 2100 (<3500 nmol/24 hours)

Urine Cortisol 210 (100-300) nmol/24 hours

An MRI abdomen showed a well defined 1 cm x 1.5 cm mass in the right supra-renal gland.

*What is the likely diagnosis?*

- 1- Pheochromocytoma
- 2- Multiple endocrine neoplasia I
- 3- Renal artery stenosis
- 4- Cushing's syndrome
- 5- Conn's syndrome

## Answer &amp; Comments

Answer: 5- Conn's syndrome

The diagnosis is Conn's syndrome.

Conn syndrome is characterized by increased aldosterone secretion from the adrenal glands, suppressed plasma renin activity (PRA), hypertension, and hypokalemia as seen in the case above.

Routine laboratory studies can show hypernatremia, hypokalemia, and metabolic

alkalosis resulting from the action of aldosterone on the distal tubule of the kidney.



## [ Q: 2177 ] MRCPass - 2011 May

A 41 year old, chronic hemodialysis patient received a living donor kidney transplant from an HLA-identical sibling.

The transplant recipient had no antibodies to CMV at the time of transplantation, whereas the donor was CMV positive. The posttransplant immunosuppression therapy included tacrolimus 3 mg twice a day, mycophenolate mofetil 1000 mg twice a day, and prednisone 20 mg every day.

On posttransplant day 39, the patient was admitted to the inpatient transplant service, complaining of abdominal flank pain, nausea and experiencing malaise. She had been having intermittent fevers for the last week. At that time, the patient's white blood cell count was 5.8 k/uL and her platelet count was within normal limits. Her creatinine rose from pre transplant 100 µl/l to 145 µl/l. A renal biopsy showed acute rejection. Subsequent to that biopsy result, her CMV viral load (PCR) was also found to be positive (8870 copies/mL).

*What should be done?*

- 1- Increase dose of tacrolimus
- 2- Increase dose of prednisolone
- 3- Commence ribavirin
- 4- Commence ganciclovir
- 5- Perform an OGD

## Answer &amp; Comments

Answer: 4- Commence ganciclovir

The timing of events and CMV serology suggests that the deterioration is due to CMV infection.

CMV infection is a multifaceted phenomenon with a variety of direct and indirect effects in the organ transplant recipient. The



symptomatology for clinical infectious disease (ie, fever, pneumonia, GI ulcers, hepatitis) ranges from the mild, subclinical case to life-threatening multi-organ disease. Most cases of symptomatic CMV infection can be characterized by a self-limiting syndrome of episodic fever spikes for a period of 3 to 4 weeks, arthralgia, fatigue, anorexia, abdominal pain, and diarrhoea. Ganciclovir is the most commonly used agent for the prevention and also treatment of CMV infection. The treatment dose is 5 mg/kg intravenously every 12 hours.

Hyperacute rejection of the renal allograft happens within hours of the transplant, and it occurs when circulating, preformed, cytotoxic, antidonor antibodies directed to the ABO blood group antigens or to the donor HLA class I antigens are present. No treatment exists, and nephrectomy is indicated.

Accelerated acute rejection is a very early, rapidly progressive, aggressive rejection reaction dependent on T cells.

It can occur within the first week of transplantation. Immediate therapy with anti-T-cell antibodies and pulse corticosteroids may reverse the process. Approximately 50% of cases can be salvaged. Chronic rejection is a slow and progressive deterioration in renal function characterized by histologic changes involving the renal tubules, capillaries, and interstitium. The precise mechanism of this disease is poorly defined and is an area of intense study. Application of conventional antirejection agents, such as corticosteroids or anti-T-cell antibodies, does not appear to alter the progressive course. Unfortunately, this is a major cause of kidney allograft loss, occurring later than 2 years posttransplantation.



[ Q: 2178 ] MRCPass - 2011 May

A 71-year-old man was admitted with a 3-week history of general debility and diarrhoea, passing copious amounts of watery, brown stool through the day and night. He

had had no abdominal pain and had started to vomit the day before presentation. On examination he was dehydrated and mildly disorientated. He had a tachycardia of 140/min, and a blood pressure of 90/70 mmHg, with a postural drop to 60/30 mmHg. His abdomen was soft and non-tender, with tinkling bowel sounds.

Sodium 140 mmol/l (135-145 mmol/l), Potassium 7.6 mmol/l (3.5-5.0 mmol/l), Chloride 83 mmol/l (95-110 mmol/l) Bicarbonate 16 mmol/l (22-26 mmol/l) Urea 32 mmol/l (2.8-8.9 mmol/l) Creatinine 360 µmol/l (75-115 µmol/l) Glucose 4.9 mmol/l (3.9-6.1 mmol/l) pH 7.20 (7.35-7.45 pH units). An ECG shows broad complexes and tall T waves.

*What should be given next?*

- 1- Frusemide
- 2- Haemodialysis
- 3- Sodium bicarbonate
- 4- Insulin and dextrose
- 5- Calcium gluconate

#### Answer & Comments

Answer: 5- Calcium gluconate

The important management step is to provide cardioprotection in the form of calcium gluconate, particularly when there are ECG changes.

Following this the patient should have insulin and dextrose, as well as consideration for haemodialysis if the potassium does not improve. Sodium bicarbonate therapy should be reserved for the treatment of severe metabolic acidosis (i.e., pH below 7.2 or a bicarbonate level below 10 to 15 mmol per L) with or without associated hyperkalemia.



[ Q: 2179 ] MRCPass - 2011 May

A 53-year-old female presented with two month history of an itchy rash which first appeared on her wrist and gradually her neck and upper arms. She also complained of a sore tongue and lethargy which had become increasingly severe over the past 5 months. There was no relevant past medical, family or drug history.

On examination the mucous membranes were pale, the tongue appeared smooth and shiny with several superficial erosions on the upper surface. There were annular atrophic pigmented lesions on the abdomen, lumbar region, back of the neck and scattered over other areas on the trunk.

*What is the most likely diagnosis?*

- 1- Guttate psoriasis
- 2- Granuloma annulare
- 3- Pityriasis versicolor
- 4- Pityriasis rosea
- 5- Lichen planus

#### Answer & Comments

Answer: 5- Lichen planus

There is an increased incidence of lichen planus in several diseases in which there is autoimmune phenomena.

Lichen planus (LP) is a pruritic, papular eruption characterized by its violaceous color; polygonal shape; and, sometimes, fine scale.

The initial lesion is usually located on the flexor surface of the limbs, such as the wrists.

After a week or more, a generalized eruption develops with maximal spreading within 2-16 weeks. Oral lesions may be asymptomatic or have a burning sensation, or they may even be painful if erosions are present.

Characteristic fine, white lines, called Wickham's striae, are often found on the papules. Hyperpigmentation, subungual

hyperkeratosis, onycholysis, and longitudinal melanonychia can result from LP.



Oral lichen planus



Lichen Planus on flexural surface



[ Q: 2180 ] MRCPass - 2011 May

A 60 year old man presents with leg weakness and breathlessness. He had bilateral lower limb paraesthesias followed by bilateral progressive leg weakness and difficulty in walking. The symptoms have worsened over the last 5 days. He reported an episode of an upper respiratory tract infection 3 weeks prior to the onset of the neurological symptoms. A lumbar puncture was performed.

Cerebrospinal fluid revealed increased protein but normal white blood cell count.

*How should his respiratory function be monitored?*

- 1- PEFR
- 2- Vital capacity
- 3- Tidal volume
- 4- Arterial blood gases
- 5- Chest expansion

#### Answer & Comments

Answer: 2- Vital capacity

The history here of ascending limb weakness following a recent infection is typical of guillain barre syndrome (GBS).

A typical GBS patient presents with rapidly ascending symmetrical weakness, which may progress to respiratory failure in 30% of patients. Vital capacity measurements are important in Guillain Barre syndrome.

Patients with an FVC less than 15-20 mL/kg indicate compromise and need to be observed for the need for ventilation.



[ Q: 2181 ] MRCPass - 2011 May

A 26 year old patient presents to the clinic for advice. His brother has recently been diagnosed with haemochromatosis.

*Which one of the following is the most useful screening test?*

- 1- Ferritin
- 2- HFE gene analysis
- 3- Ultrasound of the liver
- 4- Liver iron levels
- 5- Transferrin saturation

#### Answer & Comments

Answer: 5- Transferrin saturation

Transferrin saturation (TS) is the most effective and inexpensive screening test for Fe overload.

If the TS is > 45%, the test should be repeated, together with serum ferritin. If TS (with or without high ferritin) is raised, HFE genes should be determined.



[ Q: 2182 ] MRCPass - 2011 May

A 18-year-old woman presented feeling unwell to the accident and emergency department of a district general hospital. She has been attending a summer camp teaching children basic outdoor skills over the last week. She complained of a widespread rash, dry cough and sore eyes. She has no relevant past medical history and does not take regular medications. On examination, the temperature is 38 C. She has a widespread maculopapular rash with confluence. Her eyes are red and he had bilateral crepitations in the chest.

*What is the likely diagnosis?*

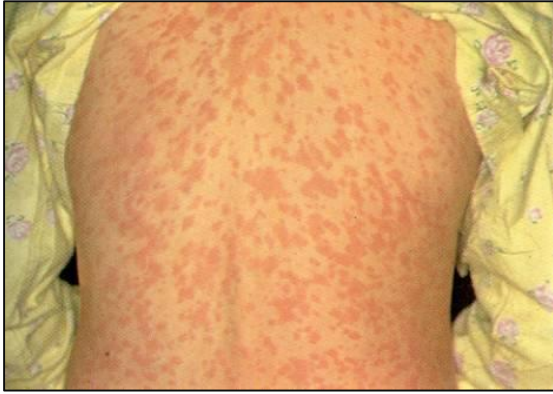
- 1- HIV seroconversion
- 2- Measles
- 3- Mumps
- 4- Typhoid fever
- 5- Chickenpox

#### Answer & Comments

Answer: 2- Measles

Measles is a highly communicable acute disease that is caused by the airborne transmission of a paramyxovirus.

In its classical form it is characterized by high fever, dry cough, coryza and conjunctivitis. Koplik's spots are rarely seen but are pathognomonic of disease. The characteristic rash appears several days after the onset of fever. The rash is maculopapular and erythematous, which spreads from the head to the torso and the extremities.



Measles Rash



[ Q: 2183 ] MRCPass - 2011 May

A 60 year old lady has investigations for renal impairment (creatinine 220  $\mu\text{mol/l}$ ). She has a previous history of hypertension, peripheral vascular disease and osteoarthritis. She has been taking diclofenac for 6 years and penicillamine for the past 2 years (both drugs were stopped 6 months ago). Her blood pressure is 100/60 mmHg and her estimated GFR is 6  $\text{mls/min/1.73m}^2$ . Results are:

Urine : protein +, blood -ve

Ultrasound of kidneys : right 8.6 cm, left 9.4 cm in length.

*What is the likely diagnosis?*

- 1- Ischaemic nephropathy
- 2- Analgesic nephropathy
- 3- Interstitial nephritis
- 4- Minimal change nephropathy
- 5- Diabetic nephropathy

#### Answer & Comments

Answer: 1- Ischaemic nephropathy

The likely diagnosis is renovascular disease due to the small kidney size.

There is only 1+ Proteinuria, which makes glomerulonephritis less likely. The other clues are the history of hypertension and the vascular risk factors for renovascular disease.



[ Q: 2184 ] MRCPass - 2011 May

A 35 year old lady has started working in a factory 2 months ago. She complains of breathlessness and wheeziness. The GP refers her to the respiratory clinic for assessment.

*What investigation is most appropriate to diagnose occupational asthma?*

- 1- Measure peak flows over 2 weeks
- 2- Serial peak flow measurements at home and work
- 3- Skin prick tests
- 4- Lung function test
- 5- Vitalogram

#### Answer & Comments

Answer: 2- Serial peak flow measurements at home and work

Lung function tests and reversibility will help to confirm asthma.

For diagnosis of occupational asthma, serial measurements of peak expiratory flow rate at home and at work: this is often the most appropriate first step.

Measurements should be made every two hours from waking to sleeping for four weeks, keeping treatment constant and documenting times at work. There should be at least 3 consecutive work days and 3 days away from work included in the measurements. (as per Guidelines from the British Occupational Health research on Occupational Asthma).



[ Q: 2185 ] MRCPass - 2011 May

A 42 year old man presented to his GP because of painful blisters on the backs of his hands in the summer. He also had a similar rash on the forehead. His face and forehead were covered with thickly wrinkled, hyperpigmented skin. The patient's urine was reddish orange.



*What is the likely diagnosis?*

- 1- Porphyria cutanea tarda
- 2- Pemphigoid
- 3- Contact dermatitis
- 4- Pityriasis rosea
- 5- Epidermolysis bullosa

#### Answer & Comments

Answer: 1- Porphyria cutanea tarda

In porphyria cutanea tarda, the urine fluoresces pink to red.

Porphyria cutanea tarda's onset is typically during the

fourth or fifth decade of life. The disease tends to develop, recur, or worsen during the spring and summer, when exposure to sunlight is greatest (ie photosensitivity). Though blisters are the most common skin manifestations of PCT, other skin manifestations like hyperpigmentation and hypertrichosis (mainly on top of the cheeks) also occur.

The most common photocutaneous manifestations of porphyria cutanea tarda are due to increased mechanical fragility after sunlight exposure; erosions and blisters form painful indolent sores that heal with milia (cysts), dyspigmentation, and scarring. The deficient enzyme in porphyria cutanea tarda is uroporphyrinogen decarboxylase.



Porphyria Cutanea Tarda



[ Q: 2186 ] MRCPass - 2011 May

A 31-year old woman has a history of 3 previous pregnancies all of which ended in spontaneous abortion between 18 and 24 weeks. The last pregnancy was complicated by episodes of purpura and thrombocytopenia with platelet counts of around  $20 \times 10^9/l$ . A diagnosis of systemic lupus erythematosus (SLE) has been diagnosed on the basis of a positive anti-nuclear factor and anti ds DNA binding of 70%. Her symptoms were occasional attacks of arthralgia and rash. She is being seen in clinic for evaluation.

*Which one of the following antibody tests is most appropriate for diagnosing the cause of her abortions?*

- 1- Anti La
- 2- Anti Ro
- 3- Anti cardiolipin
- 4- Anti Scl-70
- 5- Anti centromere

#### Answer & Comments

Answer: 3- Anti cardiolipin

Cardiolipin is a phospholipid to which the Anticardiolipin reacts with.

The lupus anticoagulant is an immunoglobulin, IgG or IgM, which also binds to phospholipids.

Patients with systemic lupus erythematosus (SLE) are more likely to develop a lupus anticoagulant than the general population as in the case above.

Both lupus anticoagulant and anticardiolipin antibody are associated with each of the clinical manifestations of the antiphospholipid syndrome, which is associated with arterial and venous thrombosis, and recurrent spontaneous abortions.



[ Q: 2187 ] MRCPass - 2011 May

A 40 year old severe asthmatic is assessed for hip pain. He takes salbutamol and atrovent inhalers, and has been on multiple courses of high dose prednisolone. He is complaining of hip pain for 8 weeks and is unable to weight bear. He gives no history of trauma.

*What is the most likely diagnosis?*

- 1- Osteomyelitis
- 2- Osteoporosis with fracture
- 3- Avascular necrosis
- 4- Sickle cell crisis
- 5- Osteoarthritis

#### Answer & Comments

Answer: 3- Avascular necrosis

A painful limb for no apparent reason would fit avascular necrosis, which is predisposed to by high dose steroids.



[ Q: 2188 ] MRCPass - 2011 May

A 45-year-old woman has presented with weakness in right lower limb that had gradually progressed over the previous 8 months.

She has had difficulty in walking for the last 2 months. On examination, she has increased tone, weakness of knee and ankle flexion and extension, and upgoing plantar on the right.

There was also pain and temperature sensation loss in the left thigh area.

*What is the most likely diagnosis?*

- 1- Motor neuron disease
- 2- Multiple sclerosis
- 3- Friedrich's ataxia
- 4- Poliomyelitis
- 5- Spinal meningioma

#### Answer & Comments

Answer: 5- Spinal meningioma

Brown-Séquard syndrome is an incomplete spinal cord lesion characterized by a clinical picture reflecting hemisection of the spinal cord.

The clinical features are:

- Unilateral upper motor neuron weakness below the level of the lesion
- Ipsilateral loss of tactile discrimination, vibratory, and position sensation below the level of the lesion
- Contralateral loss of pain and temperature sensation.



[ Q: 2189 ] MRCPass - 2011 May

A 75 year old man presents with a swelling over the right side of the temple. The lesion was noticed 4 years ago and was little changed. On examination it was smooth, shiny and non pigmented.

*What is the probable diagnosis?*

- 1- Trophic ulcer
- 2- Basal cell carcinoma
- 3- Lupus vulgaris
- 4- Sebaceous cyst
- 5- Squamous cell carcinoma



## Answer &amp; Comments

**Answer:** 2- Basal cell carcinoma

Basal cell carcinomas can have many different appearances: a red patch or irritated area; a smooth, shiny and waxy looking bump; a white or yellow scar-like area; a smooth reddish growth; or an open sore that won't heal, bleeds or oozes.

They are slow growing as described in this case, and rarely metastasise.



Basal Cell Carcinoma



[ Q: 2190 ] MRCPass - 2011 May

A 35-year-old woman had initially presented with cold hands. Her complaint usually occurred on cold days or in cold water, initially presenting as pale and cold digits which progressed to painful, purple finger tips. In the last 5 years, she complained of dysphagia and heartburn. The patient has a history of hypertension.

On physical examination, her blood pressure was 150/90 mmHg, and her heart rate was 90 /min. Skin hardness and thickening were palpated at the fingers and toes. X rays of bilateral hand and foot showed cutaneous calcifications, especially near the fingertips.

*Which one of the following tests is likely to be correlated with the diagnosis?*

- 1- ANA
- 2- DsDNA
- 3- Anti centromere antibody

- 4- Anti smooth muscle antibody
- 5- Anti U1 ribonucleoprotein (RNP)

## Answer &amp; Comments

**Answer:** 3- Anti centromere antibody

The limited cutaneous form of systemic scleroderma (lcSSc) is often referred to as CREST syndrome.

"CREST" is an acronym for the five main features: Calcinosis, Raynaud's syndrome, Esophageal dysmotility, Sclerodactyly, Telangiectasia. The anti-centromere antibody is more specific for the CREST syndrome than diffuse progressive systemic sclerosis (scleroderma).

The Anti U1 ribonucleoprotein (RNP) is a marker for mixed connective tissue disease (MCTD) which is characterized by the presence of high titers of a distinct autoantibody in combination with clinical features commonly seen in systemic lupus erythematosus (SLE), scleroderma, and polymyositis (referred to as overlap

syndrome)



[ Q: 2191 ] MRCPass - 2011 May

A 19 year old lady had a 5 kg weight loss recently which made her family concerned about her. She moved from school to college recently and had difficulty coping. She was having amenorrhoea for the last 3 months.

*Which one finding is likely to be present?*

- 1- Acanthosis nigricans
- 2- Fine hair on the face & body
- 3- Hirsutism
- 4- Increased LH/FSH ratio
- 5- Hyperthermia

## Answer &amp; Comments

Answer: 2- Fine hair on the face & body

The features are suggestive of Anorexia nervosa.

Possible physical and biochemical features are:

- emaciation
- hair changes e.g. lanugo; hair loss from the scalp
- amenorrhoea
- gonadotrophins - low FSH, LH
- T3 - low ; T4, TSH - normal



[ Q: 2192 ] MRCPass - 2011 May

A 19-year-old female was admitted after severe paracetamol overdose. She was treated with IV N-acetylcysteine.

*N-acetylcysteine acts by replenishing which compound?*

- 1- Arginine
- 2- Cysteine
- 3- Lysine
- 4- Glutathione
- 5- Methionine

## Answer &amp; Comments

Answer: 4- Glutathione

Treatment of paracetamol overdose with N-acetylcysteine is well established.

The effect is to enhance glutathione stores and to promote the elimination of paracetamol metabolites.



[ Q: 2193 ] MRCPass - 2011 May

A 21 year old female has been on sodium valproate 200mg od for epilepsy. She noticed weight gain and ataxia over the past

few months and presents to the neurology clinic for review . Otherwise she is only on oral contraceptive pill.

*Which of the following is the best alternative?*

- 1- Carbamazepine
- 2- Phenytoin
- 3- Topiramate
- 4- Lamotrigine
- 5- No treatment

## Answer &amp; Comments

Answer: 1- Carbamazepine

Sodium valproate is the drug of first choice for primary generalized epilepsy, valproate has a very wide spectrum and is effective in most seizure types, including myoclonic seizures.

It has multiple mechanisms of anticonvulsant effects, including increasing gamma-aminobutyric acid (GABA) levels in brain as well as T-type calcium channel activity. This older antiepileptic drug is used as a second-choice agent along with phenytoin, but phenytoin is not favoured in the long term due to side effects of osteopenia and cerebellar ataxia.

Both sodium valproate and carbamazepine are older generation antiepileptics. If both of these have been tried and contraindicated due to side effects, then newer generation antiepileptics such as topiramate and lamotrigine should then be used.



[ Q: 2194 ] MRCPass - 2011 May

An 18 year old man who has had acne for 1 year has been on minocycline orally. The case has been getting worse despite the drug. He currently still has pustules and scarring on the face.

*Which treatment should be started next?*

- 1- Oxytetracycline
- 2- Isotretinoin

- 3- UV light
- 4- Prednisolone
- 5- Dithranol

#### Answer & Comments

Answer: 2- Isotretinoin

Patients who are on long term tetracyclines and not responding should also have isotretinoin tablets. Oral isotretinoin is marketed under various trade names, the most common ones being Roaccutane.

Isotretinoin is used only after other acne treatments fail to produce results. Treatment of acne usually begins with topical medications (e.g., benzoyl peroxide), followed by oral antibiotics (or a combination) and finally isotretinoin therapy, because other treatments, while less effective than isotretinoin, are thought to be associated with fewer adverse effects and lower cost.



[ Q: 2195 ] MRCPass - 2011 May

A 60 year old woman presented with a 10-year history of increasing stiffness and immobility which have led to multiple falls. On examination, she had a lying BP of 130 / 80 mmHg and a standing BP of 125 / 70 mmHg. She had a mask like facies, bradykinesia, and resting a tremor in both of her arms. The tremors and rigidity was worse on the right side. There was also short-term memory loss.

*What is the diagnosis?*

- 1- Lewy body dementia
- 2- Alzheimer's disease
- 3- Parkinson's disease
- 4- Multi system atrophy
- 5- Progressive supranuclear palsy

#### Answer & Comments

Answer: 3- Parkinson's disease

Idiopathic Parkinson's disease is characterised by tremor, rigidity and bradykinesia (which is typically asymmetrical).

There are also features of postural instability, a mask like face and a shuffling gait.

Autonomic dysfunction is often associated (mild postural hypotension)



[ Q: 2196 ] MRCPass - 2011 May

A 50 year old patient with Parkinson's disease has been established on ropinirole.

*What is its mechanism of action?*

- 1- Dopamine agonist
- 2- Monoamine oxidase inhibitor
- 3- Antiviral drug
- 4- Catechol - o - methyl transferase inhibitor
- 5- Anticholinergic drug

#### Answer & Comments

Answer: 1- Dopamine agonist

--careldopa (contains L dopa) is often the first medication used to increase dopaminergic activity in the basal ganglia.

-Benzotropine is an anticholinergic drug, used typically when there are tremors.

-Entecapone is a Catechol - o - methyl transferase inhibitor.

-Selegiline is an MAO inhibitor (potentiates dopamine)

-Amantadine is an antiviral drug (also potentiates dopamine) used as a second line drug.

-Apomorphine is a dopamine agonist used for on-off fluctuations.

-Ropinirole is a dopamine agonist (D2,D3, D4) which is used in conjunction or in place with levodopa.



[ Q: 2197 ] MRCPass - 2011 May

*Which one of the following is a marker of bad prognosis in acute lymphoblastic leukaemia?*

- 1- Pre-B phenotype
- 2- Age of < 20 years
- 3- Initial white cell count of  $18 \times 10^9/l$
- 4- Female sex
- 5- BCR-Abl gene

#### Answer & Comments

Answer: 5- BCR-Abl gene

Acute lymphoblastic leukaemia (ALL) is most common in childhood with a peak incidence at 4-5 years of age, and another peak in old age.

Some prognostic factors are:

Sex: females tend to fare better than males.

Age at diagnosis: children between 1-10 years of age are most likely to develop ALL and to be cured of it.

Cytogenetics: Philadelphia translocation, t(9;22) is a bad prognostic factor. (Philadelphia translocation, t(9;22) - good prognosis in CML, poor prognosis in AML + ALL) The exact chromosomal defect in Philadelphia chromosome is a translocation. Parts of two chromosomes, 9 and 22, swap places. The result is that a fusion gene is created by juxtapositioning the Abl1 gene on chromosome 9 (region q34) to a part of the BCR ("breakpoint cluster region") gene on chromosome 22 (region q11). The result of the translocation is the oncogenic BCR-ABL gene fusion. Because the Abl gene expresses a membrane-associated protein, a tyrosine kinase, the BCR-Abl transcript is also translated into a tyrosine kinase, adding a phosphate group to tyrosine. Although the BCR region also expresses serine/threonine kinases, the tyrosine kinase function is very relevant for drug therapy. Tyrosine kinase

inhibitors (such as imatinib and sunitinib) are important drugs against a variety of cancers including in CML, and sometimes in Ph-positive acute lymphoblastic leukemia (Ph+ALL)



[ Q: 2198 ] MRCPass - 2011 May

A 54-year-old woman presents with periods of sweats and tremors which are relieved by eating. She has gained approximately 6 kg in weight in the last 2 years. Her BM is 4.5. Blood tests are: Hb 13 g/dl, MCV 78 fl, WCC  $7 \times 10^9/l$ , platelets  $200 \times 10^9/l$ , sodium 135 mmol/l, potassium 4.7 mmol/l, urea 5 mmol/l, creatinine 100  $\mu\text{mol/l}$ , TSH - 3.3 (0.3-4) mU/l, free T4 -20 (10-24) pmol/l.

*What is the most appropriate investigation?*

- 1- 72 hour fast
- 2- CT scan of pancreas
- 3- MRI of the brain
- 4- Insulin C-peptide concentration
- 5- Oral glucose tolerance test

#### Answer & Comments

Answer: 1- 72 hour fast

This patient has symptoms suggestive of hypoglycaemia which are relieved by carbohydrate.

The likely cause is an insulinoma which is an insulin secreting pancreatic tumour.

The best way of confirming the diagnosis is with a 72 hour fast. During the fast, the patient with an insulinoma may get episodes of hypoglycaemia with measured inappropriately high insulin C peptide (endogenous insulin).

Measurement of C-peptide is useful in excluding factitious hypoglycaemia from self injection of insulin. Insulin preparations do not contain C-peptide.



[ Q: 2199 ] MRCPass - 2011 May

A 65-year-old female is brought to A&E by her family, who are concerned about her increasing lethargy and confusion over the past 3 days. There is a history of diarrhea in the preceding few days. On examination she is found to be pyrexial at 38°C. Breath sounds are clear and there is mild tenderness in the lower abdomen.

Blood tests results show :

Hb 8.6 g/dl

WCC  $12 \times 10^9/l$

Platelets  $65 \times 10^9/l$

sodium 138 mmol/l

potassium 4.7 mmol/l

Urea 22.1 mmol/l

Creatinine 366 mmol/l

*What is the likely causative organism?*

- 1- Staphylococcus aureus
- 2- Neisseria Meningitidis
- 3- Legionella
- 4- Leptospira
- 5- E coli 0157

#### Answer & Comments

Answer: 5- E coli 0157

The patient has haemolytic uraemic syndrome.

It is characterized by the triad of microangiopathic hemolytic anemia, thrombocytopenia, and acute renal failure. Diarrhea (E coli 0157) and upper respiratory infection are the most common precipitating factors. The hallmark of HUS in the peripheral smear is the presence of schistocytes (fragmented, deformed red cell fragments) and helmet-shaped RBCs.



[ Q: 2200 ] MRCPass - 2011 May

A 45 year old lady, presented with a history of pain in the upper abdomen and an ultrasound showed gallstones.

She underwent a laparoscopic cholecystectomy. Initially she felt well but started to develop frequent diarrhoea. In view of the history, what treatment is she likely to need?

- 1- Cholestyramine
- 2- Azathioprine
- 3- Bromocriptine
- 4- Pancreatin
- 5- Amitriptyline

#### Answer & Comments

Answer: 1- Cholestyramine

The term postcholecystectomy syndrome (PCS) describes the presence of symptoms after cholecystectomy.

Two types of problems may occur. The first problem is continuously increased bile flow into the upper GI tract, which may contribute to esophagitis and gastritis. The second consequence is related to the lower GI tract, where diarrhea and colicky lower abdominal pain may result which is described in the case above. Cholestyramine has been of help for patients with diarrhea. It is a bile acid sequestrant, which binds bile in the gastrointestinal tract to prevent its reabsorption.

It has been used in cases of pruritus due to jaundice. Cholestyramine is also used to prevent diarrhea in Crohn's disease patients who have undergone post-ileal resection. The terminal portion of the small bow el (ileum) is where bile acids are reabsorbed.



[ Q: 2201 ] MRCPass - 2011 May

An 81 year old woman was found to



be anaemic by the GP following complaints of feeling generally unwell. She was referred to the haematology department, where subsequent investigations found that she had idiopathic myelofibrosis.

*What is the commonest presenting symptom for myelofibrosis?*

- 1- Haemoptysis
- 2- Splenomegaly
- 3- Diarrhoea
- 4- Fatigue
- 5- Rectal bleeding

#### Answer & Comments

Answer: 4- Fatigue

The most common symptoms at presentation for myelofibrosis include fatigue, fever, bruising, and shortness of breath.

Splenomegaly is associated, but not the most common presentation.



[ Q: 2202 ] MRCPass - 2011 May

A 42 year old woman presents with confusion, headache and neck stiffness. She has no previous past medical history of note. When she arrived at the admissions unit she was witnessed to have a generalised seizure which spontaneously resolved. She has a temperature of 38.5 C. A lumbar puncture was performed. Results showed:

CSF pressure: 12 cm

glucose - 3.7 mmol/l

protein < 0.55 g/l

white cells 290 (95% lymphocytes)

An MRI scan showed high signal in the temporal lobes including hippocampal formations and parahippocampal gyrae and right inferior frontal gyrus.

*What is the likely diagnosis?*

- 1- Pneumococcal meningitis

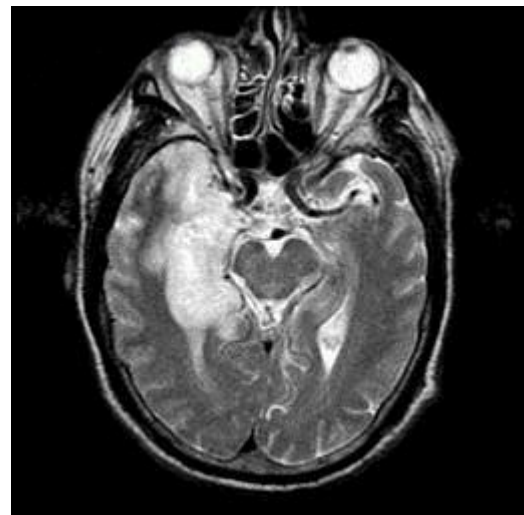
- 2- Guillain Barre syndrome
- 3- TB meningitis
- 4- Poliomyelitis
- 5- Herpes simplex virus encephalitis

#### Answer & Comments

Answer: 5- Herpes simplex virus encephalitis

In Herpes simplex virus (HSV) encephalitis, a presentation with fevers, confusion or a change in personality is common.

The CSF white cell count is elevated with lymphocytosis. The majority of cases of herpes encephalitis are caused by herpes simplex virus-1 (HSV-1). The MRI typically shows high signal changes in the T2 weighted images in the temporal lobe areas, in HSV encephalitis. Treatment is with iv acyclovir.



HSV encephalitis



[ Q: 2203 ] MRCPass - 2011 May

A 60 year old lady presents with blurred vision acutely. Further questioning revealed that she had episodes of slurred speech suggesting that she had 3 episodes of transient ischaemic attacks in the last 2 weeks. She has a history of hypertension. An ECG showed sinus rhythm. Carotid dopplers showed: right sided carotid artery normal, left sided 50% occlusion.



*What is the best management?*

- 1- Right sided carotid endarterectomy
- 2- Left sided carotid endarterectomy
- 3- Bilateral carotid endarterectomy
- 4- Carotid angioplasty
- 5- Thrombolysis

**Answer & Comments**

**Answer:** 2- Left sided carotid endarterectomy

Indications for carotid endarterectomy are: Asymptomatic patients with greater than 70% stenosis or symptomatic patients with > 50% stenosis.



[ Q: 2204 ] MRCPass - 2011 May

A 39-year-old male, was diagnosed with seropositive rheumatoid arthritis at the age of 20.

In addition to prednisolone therapy, several different disease-modifying drugs were given over the following years, including sulfasalazine, oral gold, resochine, methotrexate, and TNF-inhibitors. He smokes 15 cigarettes a day.

H presented to the hospital with shortness of breath and intermittent nausea. On clinical examination, he showed signs of extensive rheumatoid arthritis, most marked on hand, foot, and shoulder joints as well as rheumatic nodules on both elbow s. His heart rate was regular at 105/min, blood pressure was 120/70 mm Hg. He had a raised JVP of 6 cm and a left parasternal heave. He also had a palpable liver and moderate ankle oedema. His second heart sound (P2) was loud. The breath sounds are clear and heart size is normal on the chest x ray.

An echocardiogram revealed normal left ventricular systolic function, and both atria were dilated.

*What is the most likely diagnosis?*

- 1- Pulmonary embolus

- 2- Pulmonary fibrosis
- 3- Constrictive pericarditis
- 4- Aortic dissection
- 5- Aortic aneurysm

**Answer & Comments**

**Answer:** 3- Constrictive pericarditis

Constrictive pericarditis, an extra-articular complication in RA patients, is predominantly seen in males with active, seropositive disease.

Echocardiography often reveals normal ventricular function and atrial dilatation. Heart catheterization reveals equalization of elevated ventricular diastolic pressures and normal systolic function. There may be signs of right sided heart failure, as in the above case.



[ Q: 2205 ] MRCPass - 2011 May

A 17 year old student is behaving strangely and referred to the hospital. His teacher reports that he was accused the teacher of conspiring against him. He was also hearing voices asking him to cut his own throat. He has not been himself recently, with low moods according to his family. On examination, he looks apathetic and physical examination is normal. Blood tests were unremarkable, and urine testing showed traces of cannabinoids.

*What is the likely diagnosis?*

- 1- Psychotic depression
- 2- Paranoid schizophrenia
- 3- Drug induced psychosis
- 4- Anxiety disorder
- 5- Obsessive compulsive disorder

**Answer & Comments**

**Answer:** 3- Drug induced psychosis

It is well established that psychotic symptoms may follow cannabis intake.

Patients who present with these symptoms may get better and be diagnosed with schizophrenia at a later stage. Patients can present with a range of symptoms including agitation, depression, visual and auditory hallucinations.



[ Q: 2206 ] MRCPass - 2011 May

A 55 year homeless man was found collapsed at home and brought to the emergency department. He was unable to give a history. On examination, he smelled of alcohol. Observations in A&E reveal a temperature of 34 C, a pulse of 45 bpm pressure of 110/80 mmHg. Dipstick urine analysis shows Blood +++, protein +, glucose -ve.

Some of his investigation results are listed below :

sodium 135 mmol/l

potassium 4.5 mmol/l

urea 5 mmol/l

creatinine 300 µmol/l

AST 320 (1-31) U/l

LDH 800 U/L (110-230) U/L

*What likely cause of the raised serum creatinine concentration?*

- 1- Chronic renal failure
- 2- Dehydration
- 3- Hypothermia
- 4- Paracetamol poisoning
- 5- Rhabdomyolysis

#### Answer & Comments

Answer: 5- Rhabdomyolysis

The elevated serum creatinine likely to be due to rhabdomyolysis.

As patient was found unconscious and hypothermic he was likely to have sustained muscle injury. The positive urinalysis caused by myoglobin a muscle protein released during muscle damage. High amounts of myoglobin damages the renal tubules which then leads to acute kidney injury.



[ Q: 2207 ] MRCPass - 2011 May

A 36-year-old woman presented with an 8 week history of weight gain, acne, hirsuties and weakness.

Examination confirmed florid cushingoid features, with truncal obesity, striae, buffalo hump, acne, hypertension and proximal myopathy. Biochemical investigations are summarised in the table. Gross hypercortisolaemia (unsuppressed by dexamethasone), hyperglycaemia and hypokalaemia suggested an ectopic ACTH syndrome.

Computed tomographic (CT) imaging showed normal pituitary and hypothalamus, mild bilateral adrenal hyperplasia.

*What is the most likely cause?*

- 1- Pituitary adenoma
- 2- Adrenal adenoma
- 3- Small cell carcinoma
- 4- Bronchial carcinoid
- 5- Colon carcinoma

#### Answer & Comments

Answer: 3- Small cell carcinoma

The presentation of ectopic ACTH syndrome is usually with cushingoid states such as weight gain, oedema, diabetes and proximal muscle weakness.

Ectopic ACTH (not from the pituitary) is usually associated with a small cell carcinoma of the bronchus. Less common causes include thymic tumours, pancreatic adenocarcinoma and bronchial carcinoid



[ Q: 2208 ] MRCPass - 2011 May

A 76 year old lady develops diarrhea following a course of antibiotics.

*Which of the following antibiotics is most commonly associated with pseudo-membranous colitis?*

- 1- Quinolones
- 2- Cephalosporins
- 3- Macrolides
- 4- Folate antagonists
- 5- Aminoglycosides

#### Answer & Comments

**Answer:** 2- Cephalosporins

Penicillins, cephalosporins (cefuroxime) and clindamycin are most commonly associated with pseudomembranous colitis.



[ Q: 2209 ] MRCPass - 2011 May

A 24 year old lady was complaining of tremors and sweating for 6 weeks and referred for assessment.

She has lost 6 kg in weight. A nuclear medicine scan of the neck showed increased and patchy uptake of radio isotope of the thyroid glands. Following tests, she is diagnosed with thyrotoxicosis and she was started on thyroxine replacement. 2 months later, she had blood tests which showed the following results: free T4- 11 (10-24) pmol/l, TSH 8 (0.3-4) mU/l.

*What should be done next?*

- 1- T3 replacement
- 2- Check compliance of patient
- 3- Check thyroid hormone resistance
- 4- Check pituitary hormone profile
- 5- Repeat radioisotope scan

#### Answer & Comments

**Answer:** 2- Check compliance of patient

This is a new ly diagnosed patient who was started on thyroxine.

Levels show a low thyroxine level and TSH remains high. This suggests undertreatment but compliance of the treatment should be evaluated before increasing the dose of thyroxine.



[ Q: 2210 ] MRCPass - 2011 May

A 71 year old man who is a heavy smoker has been brought into hospital, with a history of cough and breathlessness. He has a history of COPD which has been managed with home nebulisers but not oxygen. He was given 60% oxygen by the ambulance crew . He appears confused when he was brought into hospital. GCS is 14/15. An arterial blood gas shows:

pH - 7.21 (7.36-7.44)

pO<sub>2</sub> - 18 (11.0-13.5) kPa

pCO<sub>2</sub> - 10 (4.6-6.0) kPa

*What should be done?*

- 1- Stop oxygen
- 2- Give 24% oxygen
- 3- Continue 60% oxygen
- 4- Non invasive ventilation
- 5- Intubation and ventilation

#### Answer & Comments

**Answer:** 2- Give 24% oxygen

The best answers here are either give 24% oxygen or non invasive ventilation.

If the patient is not too unwell and is alert, it is safe to turn down the oxygen to 24% (1 L) and assess the degree of hypoxia and CO<sub>2</sub> retention. With steroids and salbutamol nebulisers, the patient may improve and not require NIV. A O<sub>2</sub> of 18 is too high for a

patient with COPD, and when patients are admitted oxygen therapy should be delivered to achieve a O<sub>2</sub> of about 8-10 on the blood gas.



[ Q: 2211 ] MRCPass - 2011 May

A set of parents comes to seek genetic advice at the clinic. They said that their 5-year-old boy has cystic fibrosis but they themselves do not have the disease. They also have a daughter who is 17 years old but not affected by the disease.

*What is the chance that she will be a carrier of the cystic fibrosis gene?*

- 1- 1 in 2
- 2- 1 in 4
- 3- 2 in 3
- 4- 1 in 25
- 5- 100% chance

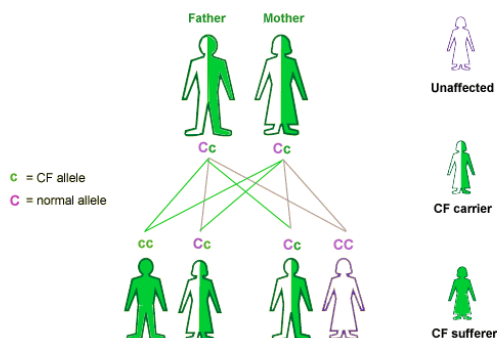
#### Answer & Comments

Answer: 3- 2 in 3

Inheritance of cystic fibrosis is autosomal recessive.

In answering this question, the simple mistake is to take carriers out of total, which makes a 1 in 2 chance. The diagram below illustrates the best way of working this out.

As the sister is not affected, there are 3 other options, so she might be a carrier in 2 of the 3 scenarios (2 in 3).



[ Q: 2212 ] MRCPass - 2011 May

A 31 year old female patient seeks medical help for infertility and has subsequently been diagnosed as having polycystic ovarian disease on ultrasound.

*Which one of the features is likely to be present?*

- 1- Low androgen levels
- 2- Weight loss
- 3- Alopecia
- 4- Decreased visual acuity
- 5- Increased insulin resistance

#### Answer & Comments

Answer: 5- Increased insulin resistance

Common symptoms of Polycystic ovary syndrome (PCOS) include:

Menstrual disorders - oligomenorrhea or amenorrhea

Infertility, generally resulting from chronic anovulation

Hirsutism and symptoms of hyperandrogenism, such as acne

Metabolic syndrome- characterised by central obesity, insulin resistance and other symptoms.

Metformin is being used increasingly in polycystic ovary syndrome (PCOS) and non-alcoholic steatohepatitis, two diseases that feature insulin resistance.

Metformin improves insulin sensitivity by increasing peripheral glucose uptake and utilization.



[ Q: 2213 ] MRCPass - 2011 May

A 26-year-old man presented with bi-temporal hemianopia. He mentioned that his shoe sizes were above that of his friends

since childhood and he often had sw eaty episodes.

*Which one of the following tests is likely to confirm the diagnosis of acromegaly?*

- 1- Random growth hormone
- 2- IGF-1
- 3- Glucose tolerance test with growth hormone suppression
- 4- Synacthen test
- 5- MRI pituitary

#### Answer & Comments

**Answer:** 3- Glucose tolerance test with growth hormone suppression

In Acromegaly, there is excess Growth hormone (GH) which is difficult to suppress.

Because GH secretion is inhibited by glucose, measurement of glucose non-suppressibility is useful. In the glucose tolerance test, baseline GH levels are obtained prior to ingestion of 100 g of oral glucose, and additional GH measurements are made at 30, 60, 90, and 120 minutes following the oral glucose load. Patients with active acromegaly are unable to suppress GH concentration below 2 ng/mL.

Random GH measurements are often not diagnostic because of the episodic secretion of GH, but IGF-I has a long half-life, and is useful as a screen for Acromegaly. MRI may reveal a pituitary tumour but it would not be specific for Acromegaly.



[ Q: 2214 ] MRCPass - 2011 May

A 76-year-old male presented with a 4-year history of mild cognitive decline. He has a 10-year history of hypertension and type 2 diabetes. According to his family, he had become more forgetful, yet he was able to carry out simple tasks independently.. His short-term memory was impaired, as was his ability to concentrate. His gait was slow and he was unsteadyHe leaned backward when he

walked and fell often, especially when trying to turn to the left or right. He experienced urinary frequency, nocturia, and urinary incontinence at least once a

day.

*What is the most likely diagnosis?*

- 1- Alzheimer's disease
- 2- Transient ischaemic attack
- 3- Lewy body dementia
- 4- Pick's disease
- 5- Normal pressure hydrocephalus

#### Answer & Comments

**Answer:** 5- Normal pressure hydrocephalus

Normal pressure hydrocephalus (NPH) is a clinical symptom complex characterized by abnormal gait, urinary incontinence, and dementia.

The CT scan often shows evidence of hydrocephalus (distended ventricles), but the CSF pressure is normal on lumbar puncture. The treatment is to remove CSF by lumbar puncture (normally 50 mls).



[ Q: 2215 ] MRCPass - 2011 May

A 25 year old man is investigated for infertility. He also had a history of delayed pubertal development. Physical examination revealed a slim tall man. There was testicular atrophy bilaterally and also gynaecomastia. There was also sparse body hair.

*What test is likely to reveal the diagnosis?*

- 1- Polymerase chain reaction
- 2- Southern Blotting
- 3- Chromosomal analysis
- 4- ELISA
- 5- VDRL



## Answer &amp; Comments

**Answer:** 3- Chromosomal analysis

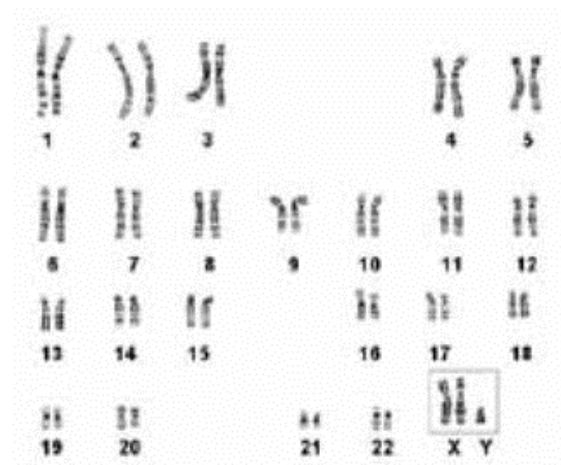
Klinefelter's syndrome (XXY) causes testicular atrophy, which commonly leads to gynecomastia and infertility.

Diagnosis is by chromosomal analysis (shown below).

Androgen deficiency causes eunuchoid body proportions;

sparse or absent. facial, axillary, pubic, or body hair; decreased muscle mass and strength; feminine distribution of adipose tissue; gynecomastia; small testes and penis.

Androgen therapy is the most important aspect of treatment. Testosterone replacement should begin at puberty to correct androgen deficiency



[ Q: 2216 ] MRCPass - 2011 May

A 65-year-old woman presented with a history of painful, red left eye for 3 months. The patient's past medical history includes rheumatoid arthritis, atrial fibrillation and diabetes. She has arthritis involving both the knee joints and hands but symptoms are well controlled at present.

On examination, visual acuities were 6/9 on the right and 6/60 on the left eye. Slit lamp examination of the right eye showed a sectoral nodular changes superotemporally on

the left. There were trace cells in the anterior chambers of both the eyes. Dilated fundus examination of both the eyes showed clear vitreous, cup disc ratio of 0.3 bilaterally and no retinal lesions were noted.

**What is the diagnosis?**

- 1- Scleritis
- 2- Conjunctivitis
- 3- Acute closed angle glaucoma
- 4- Uveitis
- 5- Iritis

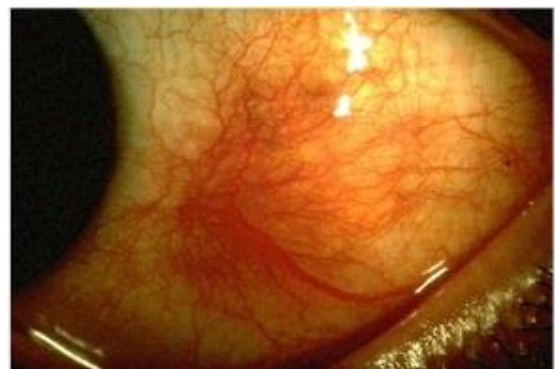
## Answer &amp; Comments

**Answer:** 1- Scleritis

The two principal eye manifestations in rheumatoid arthritis are episcleritis, which is usually mild and transient, and scleritis, which involves the deeper layers of the eye and is a more serious inflammatory condition.

Rheumatoid Scleritis is most common in the sixth decade of life, affects women more frequently than men, and is often bilateral.

Although it maybe an initial sign of rheumatoid disease it typically presents many years after the onset of RA and often at the time when joint inflammation is in remission. Scleritis typically causes redness, pain (unlike episcleritis) and loss of vision.



Scleritis



[ Q: 2217 ] MRCPass - 2011 May

A 56 year man complained of tremor



which was more severe on right. The tremor persisted while he was moving. There was mild head nodding. On examination, cranial nerves were normal. He has normal tone, power and reflexes in the upper and lower limbs.

*What is the treatment of choice?*

- 1- Tetrabenazine
- 2- Benzhexol
- 3- Co-careldopa
- 4- Propranolol
- 5- Ropinirole

#### Answer & Comments

Answer: 4- Propranolol

The features of Benign essential tremor are:

aggravation by posture and movement, relief by rest and alcohol (improvement lasting about two hours), most affected are the arms, head and vocal apparatus.

There is often no rigidity, no cerebellar signs, it is a familial condition.

Management options include: Blockers - including propranolol, atenolol and sotalol

primidone

topiramate

botulinum A toxin-haemagglutinin complex



[ Q: 2218 ] MRCPass - 2011 May

A 57 years old woman was admitted with complaints of anorexia, nausea and episodic vomiting for last 2 months, decreased urine output for last 15 days and swelling of feet, face and upper limbs for last 15 days. She had history of fall 12 months back after which she sustained mild compression fracture of L1 vertebra. After the fall, she has had persistent backaches. On examination, she was pale, BP was 160/90 mmHg and bilateral pedal

oedema. There was tenderness over the upper lumbar region.

Blood tests showed:

Hb 10.5 g/dl, WCC  $7 \times 10^9/l$ , platelets  $220 \times 10^9/l$ , sodium 135 mmol/l, potassium 4.2 mmol/l, urea 16 mmol/l, creatinine 220  $\mu\text{mol/l}$ , ALT 22 (5-35) U/l, Bilirubin 13(1-22)  $\mu\text{mol/l}$ , Albumin 32 (37-49) g/l, calcium 2.8 (2.25-2.7) mmol/l, phosphate 0.70 (0.8-8) pmol/l.

Routine urine examination showed urine albumin trace, urine protein/creatinine ratio 2.7 and urinary Bence Jones protein was positive.

*What test should be carried out to confirm the diagnosis?*

- 1- Bone marrow aspiration
- 2- Plasma electrophoresis
- 3- MRI of the spine
- 4- Renal ultrasound
- 5- Blood film

#### Answer & Comments

Answer: 1- Bone marrow aspiration

The pathological fractures, renal impairment and hypercalcaemia point towards multiple myeloma.

The best answers are either plasma electrophoresis or bone marrow aspiration. Serum electrophoresis is better as a screening tool and bone marrow aspirate and biopsy samples to calculate the percent of plasma cells in the aspirate (reference range, <3%) will be the most diagnostic test.



[ Q: 2219 ] MRCPass - 2011 May

*Which one of the following enzymes is inhibited by alpha 1 antitrypsin?*

- 1- Neutral alpha glucosidase
- 2- Peroxisome catalase

- 3- Lymphocyte 5 nucleotidase
- 4- Lactate dehydrogenase
- 5- Neutrophil elastase

#### Answer & Comments

**Answer:** 5- Neutrophil elastase

Alpha 1-antitrypsin (A1AT) is produced in the liver, and one of its functions is to protect the lungs from the neutrophil elastase enzyme, which can disrupt connective tissue.

Smokers develop increased levels of elastase enzymes and thus are more at risk of emphysema in alpha 1 antitrypsin deficiency.



[ Q: 2220 ] MRCPass - 2011 May

A 44 year old man is referred to the hospital by the GP as he had a routine chest x ray which was abnormal. The patient does not complain of any symptoms. He is a non smoker and has no previous medical history of respiratory problems. His BP was 110/80 & pulse was 80/min. CXR shows a pneumothorax with a 1.5 cm diameter rim of air from the chest wall.

*Which is the most appropriate step?*

- 1- Chest drain
- 2- Oxygen therapy
- 3- Observation and follow up
- 4- Needle aspiration
- 5- VATs procedure

#### Answer & Comments

**Answer:** 3- Observation and follow up

This patient has a asymptomatic primary pneumothorax.

The latest BTS guidelines (2010) continues to distinguish between a large and small pneumothorax as defined by a rim of > 2cm or < 2 cm from the chest wall. For patients who are asymptomatic, the patient can be

discharged with a follow up appointment to reassess in 2-4 weeks.

A repeat aspiration is recommended if the patient is still symptomatic after the first aspiration (for a primary pneumothorax) and < 2.5 l of air was aspirated in the first attempt as in this case.

BTS Pneumothorax 2010 Guideline.



[ Q: 2221 ] MRCPass - 2011 May

A 26-year-old left-handed woman was referred for evaluation of pain in the left wrist. 6 months previously, she started to develop numbness involving the lateral three digits of the left hand and pain in the left wrist. There was weakness of thumb abduction and mild wasting of the thenar muscles. Muscle stretch reflexes were normal.

Sensation to pinprick was diminished on the volar surface of the second and third digits of the left hand. On her left side, Phalen's sign was present, and Tinel's sign was elicited over the median nerve at the wrist.

*What is the likely diagnosis?*

- 1- Brachial plexus neuropathy
- 2- Ulnar nerve neuropathy
- 3- Radial nerve neuropathy
- 4- Axillary nerve neuropathy
- 5- Carpal tunnel syndrome

#### Answer & Comments

**Answer:** 5- Carpal tunnel syndrome

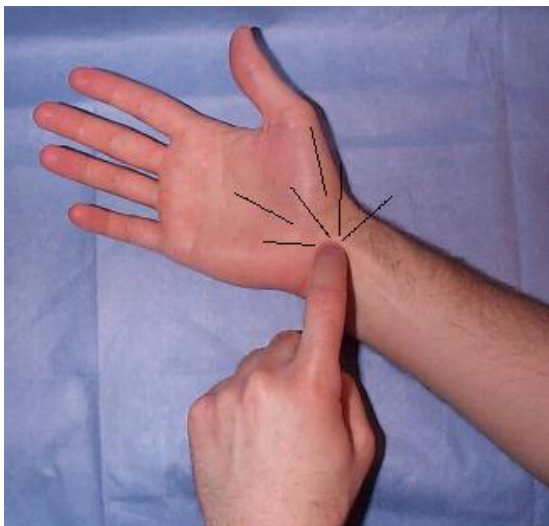
Carpal tunnel syndrome occurs when the median nerve is compressed at the wrist, leading to pain, paresthesia, and muscle weakness in the forearm and hand.

There may be loss of sensation to the area of the thumb, index, middle, and radial half of the ring finger motor wasting and weakness lead to thenar wasting and weakened abduction of the thumb

Phalen's test is used in carpal tunnel syndrome where forcible palmar flexion of the wrist causes venous engorgement of the canal and an exacerbation of the symptoms. Tinel's test is performed by tapping over the carpal tunnel, it causes tingling in the thumb and radial two and a half fingers.



Phalen's test



Tinel's test



[ Q: 2222 ] MRCPass - 2011 May

A 61 year old man is unwell having ingested a bottle of dye. On examination, he is afebrile but has tachypnea, cyanosis, and drowsiness. He is given 100% oxygen but does not improve. A lab test confirms methaemoglobin levels >70% hence confirming the diagnosis. In methaemoglobinaemia, *what is the underlying mechanism?*

1- Reductive stress

2- Oxidation of  $\text{Fe}^{2+}$  to  $\text{Fe}^{3+}$

3- Increase in NADP levels

4- Increase in NADPH levels

5- Increase in glutathione system

#### Answer & Comments

Answer: 2- Oxidation of  $\text{Fe}^{2+}$  to  $\text{Fe}^{3+}$

Methaemoglobinaemia is haemoglobin with an oxidised ferric state  $\text{Fe}^{3+}$  instead of the ferrous state  $\text{Fe}^{2+}$ .

It is commonly due to oxidative stress, caused by drugs or exogenous substances e.g. sulphonamides, trimethoprim or dyes, chlorates, bromates, nitrates (fertilisers). It causes cyanosis when metHb >1.5 g/dl. Chemicals which are oxidising agents may cause this e.g. aniline dyes, chlorates, nitrates, nitrophenols, primaquine and sulphonamides.

Treatment is with methylene blue if methaemoglobin >3.0g/dL.

Mechanisms to counteract oxidative stress: NADH methemoglobin reductase (cytochrome-b5 reductase) (major pathway), NADPH methemoglobin reductase (minor pathway), the ascorbic acid and glutathione enzyme systems are usually overwhelmed.



[ Q: 2223 ] MRCPass - 2011 May

A 31 year old man presents with fevers, malaise and a cough. There was associated lethargy. He is a type 1 diabetic and is on insulin. He works in a water purifier factory, and legionella infection is suspected.

*Which of the following tests is most practical for confirming the diagnosis?*

1- Serum Immuno Fluorescent Antibody

2- Sputum Immuno Fluorescent Antibody

3- Sputum microscopy and culture

4- Urinary antigen

5- PCR for legionella DNA

## Answer &amp; Comments

Answer: 4- Urinary antigen

The urine antigen test is a rapid, relatively inexpensive, and practical test for the detection of Legionella

pneumophila antigen excreted in the urine or present in pleural fluid.

Direct fluorescent antibody (DFA) staining is a rapid test that can be performed on respiratory samples and tissue and requires only 2-4 hours for results. It is

very specific but not sensitive, hence a negative result does not rule out legionella infection.



[ Q: 2224 ] MRCPass - 2011 May

A 26 year old nurse has known latex allergy and currently avoids using latex gloves at work. One day after

lunch, she developed itching and flushing to her face with difficulty in breathing. She mentioned that she only had

a salad and some fruit.

*Which fruit is most likely to be associated with latex allergy?*

- 1- Banana
- 2- Orange
- 3- Apple
- 4- Pear
- 5- Grape

## Answer &amp; Comments

Answer: 1- Banana

Some people with latex allergy have allergic reactions when eating particular foods including banana, avocado,

chestnut, tomato, peach or kiw ifruit.

This is because some of the proteins in latex show cross-reactivity, perhaps

because of resemblance to a latex protein component.



[ Q: 2225 ] MRCPass - 2011 May

A 30-year-old man who has returned from a holiday in Egypt presents with diarrhoea. He had been on a cruise at the Nile river. For the past two days he has been passing frequent bloody diarrhoea associated with crampy abdominal pain. Abdominal examination demonstrates diffuse lower abdominal tenderness but there is no guarding or rigidity. His temperature is 37.8°C.

*What is the most likely causative organism?*

- 1- Giardiasis
- 2- Enterotoxigenic Escherichia coli
- 3- Staphylococcus aureus
- 4- Shigella
- 5- Salmonella

## Answer &amp; Comments

Answer: 4- Shigella

All are common causes of traveller's diarrhoea.

However, North Africa and the Middle East (in particular Egypt) were also commonly reported regions of travel for Shigella spp infections.

Some of the infectious causes of bloody diarrhoea are:

- Salmonella
- Shigella
- Campylobacter jejuni
- Yersinia enterocolitica
- E. coli
- Entamoeba histolytica



[ Q: 2226 ] MRCPass - 2011 May

A 25 year old man was admitted to the with the complaints of generalised weakness of whole body. Upon further enquiry, he described easily being tired, difficulty with his speech and drooping of both the eyelids for the past 6 months. All his symptoms are worse on exertion and in the evening. He mentioned that in the evenings he occasionally developed double vision. He does not have any past medical history and does not take regular medication. On examination he has a BP of 120/70 mmHg and O2 saturations of 99% on air. He had bilateral ptosis, reduced power in all the muscles of the four limbs with normal reflexes, bilateral flexor planters and normal sensation.

*What is the likely diagnosis?*

- 1- Motor neuron disease
- 2- Multiple sclerosis
- 3- Myasthenia gravis
- 4- Paraneoplastic syndrome
- 5- Parkinson's syndrome

#### Answer & Comments

Answer: 3- Myasthenia gravis

Myasthenia Gravis is an autoimmune neuromuscular disease leading to fluctuating muscle weakness and fatiguability.

It is an autoimmune disorder, in which weakness is caused by circulating antibodies that block acetylcholine receptors at the postsynaptic neuromuscular junction.

The classic feature of myasthenia gravis is fatiguability. Muscles become progressively weaker during periods of activity and improve after periods of rest. Muscles that control ocular movements, facial expression, chewing, talking, and swallowing are affected. Ptosis and diplopia are common presentations.

Medication consists mainly of cholinesterase inhibitors (neostigmine, pyridostigmine) to

directly improve muscle function and immunosuppressant (prednisone, cyclosporin, mycophenolate and azathioprine).

Thymectomy is essential in cases of suspected thymoma in view of the potential neoplastic effects of the tumor.



[ Q: 2227 ] MRCPass - 2011 May

A 76 year-old female was seen in the Emergency department with a 2 day history of headaches and fever. On examination, the patient had a temperature of 38.5 °C. There was also evidence of meningism with a positive Kernig's sign. Tone, power and reflexes were normal apart from general weakness. There was no sensory deficit. A lumbar puncture was performed. CSF showed 100 white cells (90% lymphocytes), protein 0.9 (<0.5) and glucose 3.3, plasma glucose 7.5. The patient was commenced on rifampicin, isoniazid, pyrazinamide and ethambutol.

*What other drug should be added?*

- 1- Fusidic acid
- 2- Streptomycin
- 3- Prednisolone
- 4- Linezolid
- 5- Rituximab

#### Answer & Comments

Answer: 3- Prednisolone

In Tuberculous meningitis, Fever, headache, confusion and meningism are presenting features.

The CSF usually has a high protein, low glucose and a raised number of lymphocytes as seen in this patient.

Acid-fast bacilli are sometimes seen on a CSF smear, but more commonly, M. tuberculosis is grown in culture.

Quadruple Tuberculous therapy is recommended in cases of pulmonary TB, but



for TB meningitis, prednisolone is added and treatment is continued for at least 1 year.



[ Q: 2228 ] MRCPass - 2011 May

A patient who is on haemodialysis is on several medications.

*Which one of the following is the most likely reason for a drug to be ineffectively removed by dialysis?*

- 1- High water solubility
- 2- High first pass metabolism
- 3- High plasma protein binding
- 4- High volume of distribution
- 5- Low bioavailability

#### Answer & Comments

**Answer:** 3- High plasma protein binding

Because the primary binding proteins for most drugs (albumin,  $\alpha_1$ -acid glycoprotein) are of large molecular size, the drug-protein complex is often unable to cross the dialysis membrane, especially the hemodialysis membrane.

Drugs that are highly protein-bound (e.g., phenytoin, valproate) are difficult to remove from the systemic circulation by hemodialysis.



[ Q: 2229 ] MRCPass - 2011 May

A couple presents to the clinic for genetic counselling. The male partner has haemophilia whilst the female partner has been screened and shown to be a carrier of the gene causing haemophilia A.

*What is the chance that a child would have haemophilia?*

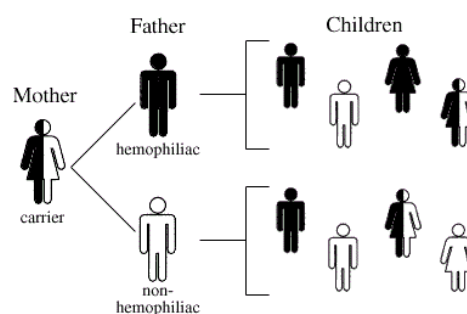
- 1- 25% if male child, 0% if female child
- 2- 50% of all children
- 3- 100% if male child, 0% if female child
- 4- 50% if male child, 0% if female child
- 5- 25% of all children

#### Answer & Comments

**Answer:** 2- 50% of all children

Hemophilia A is X linked recessive, which means that females are commonly carriers and males are affected if they inherit the affected X chromosome.

In this case, if the affected X chromosome is designated  $X_a$ , the father is  $X_aY$  and mother  $X_aX$ . The children would be either  $X_aX_a$ ,  $X_aX$ ,  $X_aY$  and  $XY$ . In this situation 50% ( $X_aX_a$  and  $X_aY$ ) of all children will be affected. It would also be 50% of male children, and 50% of female children affected (refer to top half of diagram below).



[ Q: 2230 ] MRCPass - 2011 May

A 25 year old patient has been diagnosed with adult polycystic kidney disease recently. The family came to the clinic for advice. In particular, his brother and sister would like to know the likelihood of them developing the disease.

*Which one of the following is the most appropriate screening test?*

- 1- Renal ultrasound of the brother and sister
- 2- Renal ultrasound scan of all first degree relatives
- 3- Renal MR angiography of brother and sister
- 4- Renal MR angiography of all first degree relatives
- 5- Renal function test for all first degree relatives



## Answer &amp; Comments

**Answer:** 2- Renal ultrasound scan of all first degree relatives

Although the brother and sister are enthusiastic for screening, the whole family (anyone aged >20) should be screened with ultrasound.



[ Q: 2231 ] MRCPass - 2011 May

An 80 year old lady undergoes preoperative assessment for colorectal surgery but is found to be unwell. She is on analgesic medications only. On examination, she looks pale and there is evidence of vitiligo. A spleen was palpable at 2 finger breadths below the costal margin. Investigation of blood results showed:

Hb 7.5 g/dl

MCV 106 fl

WCC  $3 \times 10^9/l$

platelets  $85 \times 10^9/l$

sodium 138 mmol/l

potassium 4.5 mmol/l

urea 6 mmol/l

creatinine 68  $\mu\text{mol/l}$

ALT 30 (5-35) U/l

ALP 110 (20-120) U/l

Bilirubin 35 (1-22)  $\mu\text{mol/l}$

Lactate dehydrogenase 550. (110-230) U/L

**What is the diagnosis?**

- 1- Pernicious anaemia
- 2- Myelodysplasia
- 3- Autoimmune haemolytic anaemia
- 4- Chronic myeloid leukaemia
- 5- Polycythaemia rubra vera

## Answer &amp; Comments

**Answer:** 1- Pernicious anaemia

Pernicious anaemia is usually associated with atrophic gastritis, the autoimmune destruction of gastric parietal cells leads to a lack of intrinsic factor.

Typically, patients with pernicious anemia are described as having a stereotypic appearance. Patients have a lemon-yellow waxy pallor with premature whitening of the hair. A splenic tip is palpable in about 20% of patients. Vitiligo which was seen here is an autoimmune disorder which may be associated with other autoimmune diseases, such as pernicious anemia, rheumatoid arthritis, type 1 diabetes, alopecia areata, and diseases of the thyroid gland.

In pernicious anaemia, the peripheral blood usually shows a macrocytic anemia with a mild leukopenia and thrombocytopenia. The mean cell volume (MCV) and mean cell hemoglobin (MCH) are increased. The bilirubin level may be elevated because pernicious anemia is a hemolytic disorder associated with increased turnover of bilirubin.

The serum lactic dehydrogenase (LDH) concentration usually is markedly increased.



[ Q: 2232 ] MRCPass - 2011 May

A 75 year old man has palpitations and is admitted to hospital. He has a past medical history of previous myocardial infarction and hypertension. An ECG shows atrial fibrillation and he was monitored on the ward. The next day, the ECG was repeated and it showed sinus rhythm.

**Which of the following should be started for maintenance of sinus rhythm?**

- 1- Digoxin
- 2- Flecainide
- 3- Amlodipine
- 4- Sotalol
- 5- Ramipril

## Answer &amp; Comments

Answer: 4- Sotalol

Flecainide is a class Ic antiarrhythmic (sodium channel blocker) which is useful for paroxysmal AF.

However, the CAST trial showed that patients who had ischaemic heart disease had a worse outcome when treated with flecainide, so it is generally not used in patients with established history of ischemic heart disease. Other helpful options to maintain sinus rhythm are beta blockers (sotalol) and amiodarone. In this scenario sotalol is the best option.



[ Q: 2233 ] MRCPass - 2011 May

A drug which has been on the market for 2 years, has had reports of possible serious side effects of fulminant hepatitis.

*What is the best way of evaluate this from a safety perspective?*

- 1- Metanalysis
- 2- Postmarketing surveillance
- 3- Randomised controlled trial
- 4- Systematic review
- 5- Case control study

## Answer &amp; Comments

Answer: 2- Postmarketing surveillance

New drugs which have had regulatory approval may not have trial data which contain enough information about rare, serious side effects, and there may not be sufficiently large trials for a new drug for metanalysis.

Postmarketing surveillance (PMS) is the practice of monitoring the safety of a pharmaceutical drug after it has been released on the market and is an important part of the science of pharmacovigilance.

Since drugs are approved on the basis of clinical trials which involve relatively small numbers of people who have been selected for this purpose, postmarketing surveillance can further refine the safety of a drug after it is used in the general population by large numbers of people who have a wide variety of medical conditions.

Postmarketing surveillance uses a number of approaches to monitor the safety of licensed drugs, including spontaneous reporting databases, prescription event monitoring, electronic health records, patient registries and record linkage between health databases.



[ Q: 2234 ] MRCPass - 2011 May

A 53 year man enquired about whether it was advisable to have vaccination prior a holiday abroad. He had treated asthma and had been on long term steroids regularly.

*Which one of the following is a live vaccine which should be used with caution in this man?*

- 1- Yellow fever
- 2- Diphtheria toxoid
- 3- Hepatitis B
- 4- Meningococcus
- 5- Tetanus toxoid

## Answer &amp; Comments

Answer: 1- Yellow fever

The live vaccines are:

- BCG
- Mumps
- Measles
- Rubella
- Yellow fever
- Smallpox



[ Q: 2235 ] MRCPass - 2011 May

*In the cell cycle, which phase does chromatin condense into chromosomes?*

- 1- Prophase
- 2- Metaphase
- 3- Anaphase
- 4- Telophase
- 5- Cytokinesis

#### Answer & Comments

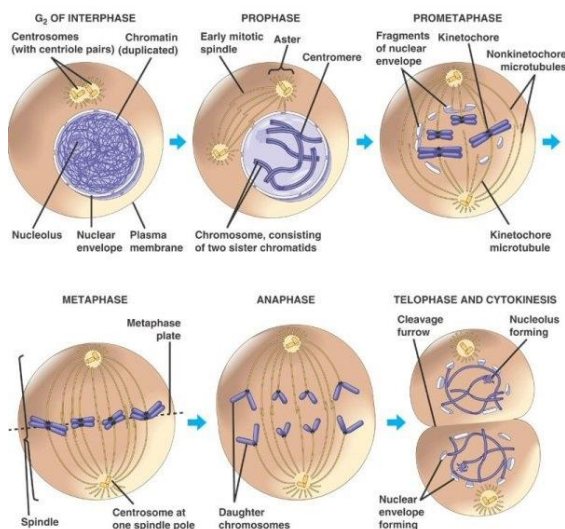
Answer: 1- Prophase

The relatively brief M phase consists of nuclear division (karyokinesis).

The M phase has been broken down into several distinct phases, sequentially known as:

Prophase, metaphase, anaphase, telophase, cytokinesis.

Prophase, is a stage of mitosis in which the chromatin condenses (it becomes shorter and fatter) into a highly ordered structure called a chromosome in which the chromatin becomes visible.



[ Q: 2236 ] MRCPass - 2011 May

A 76 year old white male with a past medical history of duodenal ulcers presents to the emergency department complaining of

nausea, vomiting, flushing, diarrhea and a dry cough for two months. The patient stated the pain did not change with food or position and was not accompanied by any fevers, chills, jaundice, diarrhea or blood per rectum. The patient's social history included occasional alcohol and tobacco use. On examination, there was hepatomegaly. Carcinoid syndrome was suspected. Investigations showed that a 24 hour urine collection for 5-hydroxyindoleacetic acid was dramatically elevated at 400 milligrams. An octreotide scan revealed increased uptake in the lung confirming the diagnosis of a carcinoid lung tumor.

*Which one of the following is the most early symptom in carcinoid syndrome?*

- 1- Diarrhoea
- 2- Facial flushing
- 3- Vomiting
- 4- Haemoptysis
- 5- Nausea

#### Answer & Comments

Answer: 2- Facial flushing

Patients with carcinoids have commonly been diagnosed with irritable bow el syndrome or idiopathic flushing.

The syndrome is characterized by hepatomegaly, diarrhea, and flushing in 80% of patients; right heart valvular disease in 50%; and asthma in 25%. Cutaneous flushing is a common manifestation (~80% of patients) and is often the earliest sign of the syndrome. Flushing can occur spontaneously, typically in the head and neck. It may be triggered by excitement, exercise, some types of food, or alcohol. Flushing is mediated by the vasoactive peptides secreted by the tumor. Diarrhea is also very common.



[ Q: 2237 ] MRCPass - 2011 May

A 41 year old lady presents with a 1 year history of pain in the right hand progressing to involve the entire right upper limb up to the scapular and pectoral regions. On examination, there is decreased pinprick and temperature sensation in the hand. There were absent biceps and supinator reflexes and there is muscle wasting in the forearm.

*The likely diagnosis is:*

- 1- Brachial plexus infiltration
- 2- Cervical spondylosis
- 3- Syringomyelia
- 4- Subacute combined degeneration of the cord
- 5- Motor neuron disease

#### Answer & Comments

Answer: 3- Syringomyelia

The clinical features are consistent with syringomyelia.

Syringomyelia is a chronic disorder characterized by the presence of a longitudinal, fluid filled cavities (syrinx) within the spinal cord. Syringa interrupts the decussating spinothalamic fibers that mediate pain and temperature. When the cavity enlarges to involve the posterior columns, position and vibration senses in the feet are lost (hence positive Rombergs). Syringa extension into the anterior horns of the spinal cord damages motor neurons (lower motor neuron) and causes diffuse muscle atrophy that begins in the hands and progresses proximally to include the forearms and shoulder girdles. Impaired bowel and bladder functions usually occur as a late manifestation of autonomic problems.



[ Q: 2238 ] MRCPass - 2011 May

A 56-year-old man presented because of a fever (up to 40°C) that had begun

12 days earlier and persisted despite treatment with oral antibiotics and anti-inflammatory drugs. The fever episodes occurred every 48 hours, with high peaks followed by abrupt resolution. He had just returned from India a month ago, and had not received any anti-malarial prophylaxis.

On presentation, he was pyrexial and pale, tachycardic and had hepatosplenomegaly. Microscopy of peripheral blood smears showed trophozoites with a parasitemia of 1.5%. Some enlarged, infected erythrocytes, with morphology typical of *Plasmodium vivax* parasites, were observed.

*What is the best antimalarial treatment?*

- 1- Quinine
- 2- Chloroquine
- 3- Mefloquine
- 4- Pyrimethamine and sulphadiazine
- 5- Artesunate

#### Answer & Comments

Answer: 2- Chloroquine

*Plasmodium vivax* is found mainly in Asia, Latin America, and in some parts of Africa.

Chloroquine is the treatment of choice for *vivax* malaria, except in Indonesia's Irian Jaya region and Papua New Guinea, where chloroquine resistance is common (then artesunate is the treatment of choice). Mefloquine is an alternative.



[ Q: 2239 ] MRCPass - 2011 May

A 48 year old patient had chest pain. His ECG showed ST elevation in the leads II, III, aVF and he also had no correlation between p waves and QRS complexes.

*Which artery is likely to be affected?*

- 1- Left main stem
- 2- Left anterior descending
- 3- Circumflex

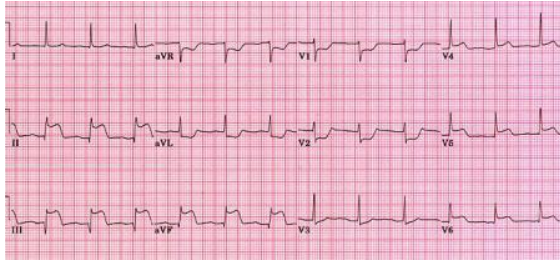
4- Right coronary artery

5- Diagonal

#### Answer & Comments

**Answer:** 4- Right coronary artery

The diagnosis is an inferior myocardial infarction with complete heart block, this is most commonly due to a RCA lesion.



Inferior MI (sinus rhythm)



[ Q: 2240 ] MRCPass - 2011 May

A 34 year old white Turkish woman presented with a swollen left leg which was painful.

She has a history of conjunctivitis, joint pains, oral and genital ulceration and livedo reticularis.

On presentation she was afebrile, with cervical lymphadenopathy. The patient was noted to have oral ulcers and a genital ulcer. She had a rash on both her legs. The leg on the left was erythematous, painful and tender to compression.

**What is the likely diagnosis?**

- 1- Wegener's granulomatosis
- 2- Henoch Schönlein purpura
- 3- Behcet's disease
- 4- Non Hodgkin's lymphoma
- 5- Kawasaki's disease

#### Answer & Comments

**Answer:** 3- Behcet's disease

The clues for Behcet's disease here are oro-genital ulceration, eye involvement, Turkish origin and also erythema nodosum.

The usual presentation in Behcet's disease is of mouth ulcers, sore genitals and eye inflammation, and arthritis in older patients.

Patients must have must have mouth ulcers (any shape, size or number at least 3 times in any 12 months), and 2 out of the next 4 "hallmark" symptoms:

- genital ulcers (including anal ulcers and spots in the genital region and swollen testicles or epididymitis in men), -skin lesions (papulo-pustules, folliculitis, erythema nodosum, acne in post-adolescents not on corticosteroids)
- eye inflammation (iritis, uveitis, retinal vasculitis, cells in the vitreous), pathergy reaction (papule >2 mm dia. 24-48 hrs or more after needle-prick).

There is an increased thrombotic tendency among Behcet's disease patients, in this case the patient has a clinical presentation consistent with a deep vein thrombosis in the leg.



Oral Ulceration in Behcets



[ Q: 2241 ] MRCPass - 2011 May

An 81-year-old man with a history of schizoaffective disorder presented to hospital with increasing auditory hallucinations, persecutory delusions and depressive symptoms, including suicidal ideation. He was admitted to hospital and given haloperidol for his psychotic symptoms.



Three days later he became mildly confused. His temperature was elevated (38.3°C), and although normotensive (blood pressure 124/84 mm Hg) he had tachycardia (heart rate 128 beats/min) and exhibited Parkinsonian signs.

*Which one of the following suggests neuroleptic malignant syndrome?*

- 1- Muscular rigidity
- 2- Visual blurring
- 3- Diarrhoea
- 4- Constipation
- 5- Erythematous rash

#### Answer & Comments

**Answer:** 1- Muscular rigidity

Neuroleptic malignant syndrome (NMS) refers to the combination of hyperthermia, rigidity, and autonomic dysregulation (labile blood pressure) that can occur as a serious complication of the use of antipsychotic drugs.

The most widely accepted mechanism by which antipsychotics cause NMS is that of dopamine D2 receptor antagonism.

This leads to increased muscle rigidity and tremor via extrapyramidal pathways.



[ Q: 2242 ] MRCPass - 2011 May

*Within which part of the nephron does the anti diuretic hormone work on?*

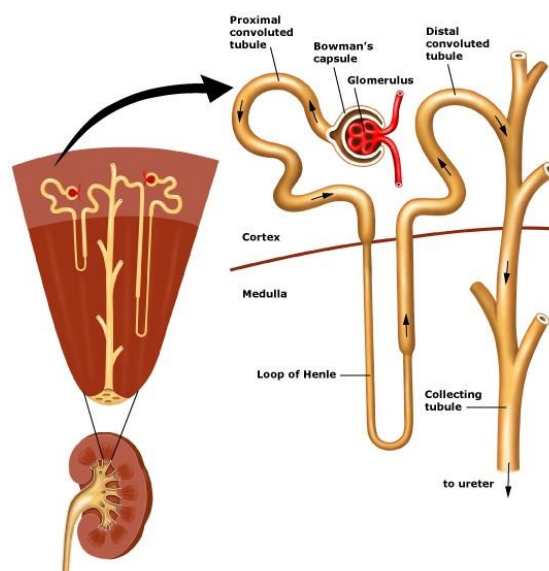
- 1- Proximal convoluted tubule
- 2- Descending limb Loop of Henle
- 3- Ascending limb Loop of Henle
- 4- Distal convoluted tubule
- 5- Cortical collecting duct

#### Answer & Comments

**Answer:** 5- Cortical collecting duct

Though the collecting duct particularly the outer medullary and cortical collecting ducts are normally impermeable to water, but they become permeable under the actions of antidiuretic hormone (ADH).

As much as three-fourths of the water from urine can be reabsorbed as it leaves the collecting duct by osmosis.



[ Q: 2243 ] MRCPass - 2011 May

A 70-year-old woman presented to the emergency room with an acute history of progressive exertional chest pain. The pain was sharp and was associated with shortness of breath. Physical activity made it worse and improvement was noted with sublingual nitroglycerin. On arrival to the department her blood pressure was 105/62 mmHg, pulse was 98 beats per minute. Cardiac examination revealed a regular heart with no murmur, rubs or gallop. The ECG showed sinus rhythm with low voltage, left axis deviation with ST, lateral T wave abnormalities and elevated cardiac enzymes. Her Troponin T levels peaked at 5ng/ml (< 0.10ng/ml). The following day, her chest pains subsided but she developed fevers, myalgia and a mottled discoloration of both her legs.

*What other finding is likely?*



- 1- Anaemia
- 2- Polycythaemia
- 3- Thrombocytopenia
- 4- Eosinophilia
- 5- Haemolysis

#### Answer & Comments

**Answer:** 4- Eosinophilia

This patient had a myocardial infarction and has developed cholesterol emboli probably due to severe atherosclerosis of the aorta.

The symptoms experienced in cholesterol embolism are fever, muscle ache and weight loss. Embolism to the legs causes a mottled appearance and purple discoloration of the toes, small infarcts and areas of gangrene due to tissue death that usually appear black, and areas of the skin that assume a marbled pattern known as livedo reticularis. The full blood count may show particularly high numbers eosinophils (more than  $0.5 \times 10^9/l$ ); this occurs in 60-80% of cases.



[ Q: 2244 ] MRCPass - 2011 May

A 26-year-old presents with a six weeks history of galactorrhoea. She has no other symptoms but takes medication for contraception, indigestion and headaches. She was found to have a Prolactin level of 850 mU/L (< 450).

*Which one of the following drugs may be responsible?*

- 1- Codeine phosphate
- 2- Metoclopramide
- 3- Omeprazole
- 4- Oral contraceptive pill
- 5- Sumatriptan

#### Answer & Comments

**Answer:** 2- Metoclopramide

Metoclopramide acts as a dopamine antagonist.

Dopamine inhibits the release of Prolactin from the anterior Pituitary gland. Therefore, metoclopramide can predispose to hyperprolactinaemia, which in turn causes galactorrhoea.



[ Q: 2245 ] MRCPass - 2011 May

A 46 year old lady presented to her GP with lesions in skin that were circular with an erythematous raised rim with central atrophy. There was scaliness, follicular plugging, and telangiectasia over the scalp, ears and face.

This was confirmed to be discoid lupus by the dermatologist and she has been tried on betnovate steroid topical treatment but has not improved.

*What should be used next?*

- 1- Diprobace cream
- 2- Tacrolimus
- 3- Azathioprine
- 4- Hydroxychloroquine
- 5- PUVA therapy

#### Answer & Comments

**Answer:** 4- Hydroxychloroquine

Discoid lupus erythematosus (DLE) is a chronic, scarring, atrophy producing, photosensitive dermatosis.

DLE may occur in patients with systemic lupus erythematosus (SLE).

Initial treatment comprises the avoidance of direct sunlight. Following this, Hydroxychloroquine is the gold standard treatment. Other options include azathioprine, dapsone, thalidomide and tacrolimus.



[ Q: 2246 ] MRCPass - 2011 May

A 41-year-old woman with a past history of epilepsy complains of recurrent migraine type headaches. The headaches have been occurring daily, and are associated with flashing lights. She was previously treated with paracetamol, aspirin and diclofenac with little improvement.

*What of the following medications should you then prescribe?*

- 1- Pizotifen
- 2- Meperidine
- 3- Sumatriptan
- 4- Ergotamine
- 5- Propranolol

#### Answer & Comments

Answer: 3- Sumatriptan

Sumatriptan is structurally similar to serotonin, and is a 5-HT<sub>1D</sub> agonist, which is one of the receptors to which serotonin binds.

Low serotonin levels in the brain may lead to a process of constriction and dilation of the blood vessels which trigger a migraine. Triptans activate serotonin receptors to stop a migraine attack, and are recommended for treating acute migraine headaches. They take 15-30 minutes to work.



[ Q: 2247 ] MRCPass - 2011 May

A 31 year old woman has a history of recurrent urinary tract infections as a child. Her mother has a history of hypertension and was told that her kidneys were 'damaged'. An ultrasound of the patient showed scarring in both kidneys.

*What is the most likely diagnosis?*

- 1- Autosomal dominant polycystic kidney disease
- 2- Reflux nephropathy
- 3- Renal cell carcinoma

4- Diabetic nephropathy

5- IgA nephropathy

#### Answer & Comments

Answer: 2- Reflux nephropathy

Urine reflux is the most common cause of chronic pyelonephritis and can lead to nephropathy.

The risk factors include a personal or family history of reflux. Ultrasound can identify renal scarring if moderate to severe in degree



[ Q: 2248 ] MRCPass - 2011 May

A 45 year old lady presented to hospital complaining of lesions on the skin. The patient is Brazilian and has been in the country for several months. The skin lesions were circular with an erythematous raised rim with central atrophy. There was scaliness, follicular plugging, and telangiectasia over the face. There was also evidence of loss of hair around the eyebrows.

*What is the diagnosis?*

- 1- Cutaneous leishmaniasis
- 2- Discoid lupus erythematosus
- 3- Leprosy
- 4- Lyme's disease
- 5- Pityriasis versicolor

#### Answer & Comments

Answer: 2- Discoid lupus erythematosus

Discoid lupus erythematosus (DLE) is a chronic, scarring, atrophy producing, photosensitive dermatosis.

DLE may occur in patients with systemic lupus erythematosus (SLE). Skin lesions are typically localized above the neck, with favored sites being the scalp, bridge of nose, cheeks, lower lip, and ears. The primary lesion is an erythematous papule or plaque with slight-to-

moderate scaling. As the lesion progresses, the scale may thicken and become adherent, and pigmentary changes may develop, with hypopigmentation in the central or inactive area and hyperpigmentation at the active border. Hydroxychloroquine can be used for treatment.

The other possible answer here is cutaneous leishmaniasis. The typical lesions are crusty, painless ulcers on exposed skin. Ulcerative lesions are usually shallow and circular with well-defined, raised borders and a bed of granulation tissue. However, the eyebrow alopecia for this patient makes discoid lupus more likely.



Discoid Lupus



[ Q: 2249 ] MRCPass - 2011 May

A 62 year old man presented with fevers, lethargy and 2 month history of malaise. He also mentioned altered bow el habit. On examination, he had a temperature of 39 C and a soft systolic murmur in the mitral area. He also had several splinter haemorrhages. Blood culture results within 24 hours grew streptococcus bovis.

*What investigation will help determine the underlying source of infection?*

- 1- Abdominal x ray
- 2- Colonoscopy
- 3- CT scan of the chest
- 4- Skin biopsy

## 5- Transoesophageal echocardiogram

### Answer & Comments

Answer: 2- Colonoscopy

A correlation exists between colon cancer and Strep.

bovis proliferation in the large intestine, hence predisposing to endocarditis. The patient needs a colonoscopy which may identify a colorectal malignancy predisposing to strep bovis bacteraemia and endocarditis.



[ Q: 2250 ] MRCPass - 2011 May

A 44 year old female patient presented in to clinic with a generalised blistering rash on the arms and legs. Clinical examination revealed tense skin blisters with some generalised desquamation. There was no involvement of the mucous membranes.

*What is the diagnosis?*

- 1- Pemphigus vulgaris
- 2- Erythema multiforme
- 3- Dermatitis herpetiformis
- 4- Bullous pemphigoid
- 5- Insect bite

### Answer & Comments

Answer: 4- Bullous pemphigoid

Bullous pemphigoid is more common than pemphigus , occurs more commonly in later life (>60years).

It is a chronic, autoimmune, subepidermal, blistering skin disease that rarely involves mucous membranes. Large bullae appears anyw here on the skin ,they tend to be itchy and the lesions are deep and mucosal involvement rare. Bullous

pemphigoid is characterized by the presence of immunoglobulin G (IgG) autoantibodies in the hemidesmosomal area.

These manifest as tense blisters. Direct immunofluorescence of a skin biopsy usually demonstrate IgG and complement C3 deposition in a linear band at the dermal-epidermal junction.



Bullous Pemphigoid



[ Q: 2251 ] MRCPass - 2011 May

A 35-year-old, female secretary presents to the emergency department with 7 days of bloody diarrhea and lower abdominal cramping. A flexible sigmoidoscopy and biopsy showed evidence of inflammation consistent with ulcerative colitis. Over the next few months, she continued to have several episodes of such presentations which required steroid treatment.

*What should be prescribed now?*

- 1- Infliximab
- 2- Azathioprine
- 3- Chlorpromazine
- 4- Amitriptyline
- 5- Low dose prednisolone

#### Answer & Comments

Answer: 2- Azathioprine

Azathioprine may be used in patients with Crohn's disease or ulcerative colitis that are steroid dependent or steroid resistant.

This is a very effective, safe and well-tolerated drug with no definite associated risk of cancer.

Azathioprine has a slow onset of action and requires continuing steroid cover for 8-12 weeks. The principle side-effects of azathioprine are idiosyncratic acute pancreatitis and bone-marrow suppression.



[ Q: 2252 ] MRCPass - 2011 May

A 70-year-old woman has lung carcinoma and recently underwent chemotherapy. She presented with shortness of breath and pleuritic chest pain.

*Which one of the following signs suggests a significant pericardial effusion?*

- 1- Systolic murmur
- 2- Pericardial rub
- 3- Rapid y descent of JVP
- 4- Pulsus paradoxus
- 5- Pulses alternans

#### Answer & Comments

Answer: 4- Pulsus paradoxus

The question asks for which signs are present in cardiac tamponade due to a large pericardial effusion.

The main signs are Kussmaul's sign (increase in JVP with inspiration) and Pulsus paradoxus (the inspiratory fall of aortic systolic pressure greater than 10 mm Hg).



[ Q: 2253 ] MRCPass - 2011 May

A 58 year old man has presented with chest pain and pulmonary oedema. He is managed as acute coronary syndrome. He did not tolerate a GTN infusion as his blood pressure was 85/60 but improved with frusemide and his blood pressure stabilized. An ACE-inhibitor was held off due to renal impairment. He is coincidentally found to have a chest infection, his blood cultures grew

streptococci and he was treated with augmentin. His blood tests on admission show a creatinine of 145  $\mu\text{mol/l}$  rising up to 190  $\mu\text{mol/l}$  and then 250  $\mu\text{mol/l}$  the day after.

*What is the likely cause of acute kidney injury?*

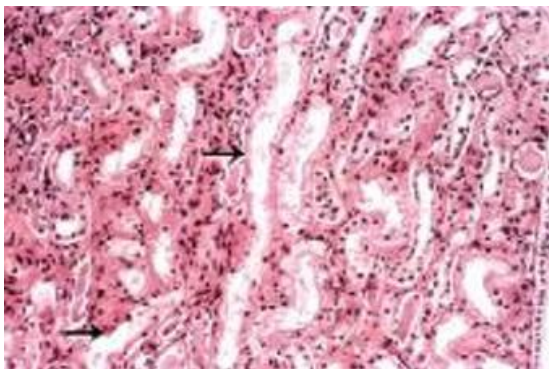
- 1- Urinary tract infection
- 2- Acute tubular necrosis
- 3- Interstitial nephritis due to augmentin
- 4- Post streptococcal glomerulonephritis
- 5- Renal artery stenosis

#### Answer & Comments

**Answer:** 2- Acute tubular necrosis

A rapid rise in creatinine following periods of hypotension is most commonly due to acute tubular necrosis.

Acute tubular necrosis or (ATN) involves the death of tubular cells that form the tubule that transports urine to the ureters while reabsorbing 99% of the water. Tubular cells continually replace themselves and if the cause of ATN is removed then recovery is likely.



A renal biopsy shows renal medulla, which is composed mainly of renal tubules. Patchy or diffuse denudation of the renal tubular cells is observed, suggesting acute tubular necrosis (ATN)



[ Q: 2254 ] MRCPass - 2011 May

A 21 year old man is tall compared to his peers. On examination, he was found to have aortic incompetence and mitral valve

prolapse. He also had pectus excavatum, arachnodactyly and arm span greater than height. Slit lamp examination revealed had upward dislocation of the lens in the eye.

*The gene defect is:*

- 1- Actin
- 2- Myosin
- 3- Fibrillin
- 4- Retinoblastoma
- 5- Elastin

#### Answer & Comments

**Answer:** 3- Fibrillin

The fibrillin gene defect is the basis of Marfan's syndrome.

It is an autosomal dominant disorder characterised by arachnodactyly, upward lens dislocation, tall habitus and flat feet. Aortic aneurysms and aortic regurgitation are also associated.



[ Q: 2255 ] MRCPass - 2011 May

A 44 year old woman was admitted to hospital with a several month history of diarrhoea, malaise and weight loss. She was in good health prior to the development of these symptoms. On examination, she had mild jaundice and looked thin. She had a distended abdomen with shifting dullness to percussion. Her blood tests show :

Hb 10.5 g/dl

MCV 82 fl

WCC  $8 \times 10^9/\text{l}$

platelets  $220 \times 10^9/\text{l}$

sodium 125 mmol/l

potassium 4.1 mmol/l

urea 11 mmol/l

creatinine 160  $\mu\text{mol/l}$

ALT 95 (5-35) U/l



AST 115 (1-31) U/l  
 ALP 220(20-120) U/l  
 Bilirubin 30 (1-22)  $\mu$ mol/l  
 Albumin 28 (37-49) g/l  
 Carcinoembryonic antigen (CEA) 3.8 <2.5 ng/ml  
 Alpha-Fetoprotein (AFP) 55 <44 ?g/L  
 CA 125 - 38 (<35) U/m  
 CA 19.9 - 250 (<40) U/ml  
 CA 15.3 - 32 (<29) U/mL  
 Prostate-Specific Antigen (PSA) 2 (<4) ng/ml

*Which one of the following is the likely primary tumour?*

- 1- Pancreas
- 2- Colorectal
- 3- Ovarian
- 4- Liver
- 5- Prostate

#### Answer & Comments

Answer: 1- Pancreas

The tumour markers are not specific to one tumour but in this case the Ca 19.9 is highest, and it is most strongly associated with pancreatic cancer.



[ Q: 2256 ] MRCPass - 2011 May

*Which is the site of action of thiazide diuretics?*

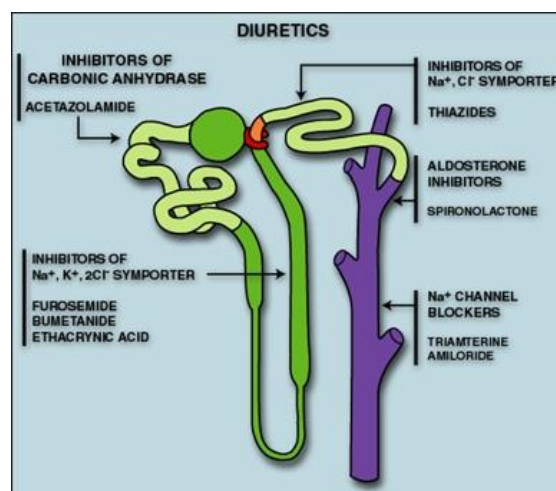
- 1- Proximal part of Distal Convoluted Tubule
- 2- Distal part of Distal Convoluted Tubule
- 3- Proximal convoluted tubule
- 4- Loop of Henle
- 5- Collecting duct

#### Answer & Comments

Answer: 1- Proximal part of Distal Convoluted Tubule

Thiazide diuretics reduce the reabsorption of sodium and chloride in the early part of the distal convoluted tubule of the kidney.

This results in the delivery of increased amounts of sodium to the distal tubule, where some of it is exchanged for potassium. The net result is increased excretion of sodium, potassium and water.



[ Q: 2257 ] MRCPass - 2011 May

A 62 year old man presents with lethargy and weight loss which has occurred over a period of 4 months. He has a history of hypertension and diabetes. He was admitted to hospital and investigated for the symptoms. A CT scan of the abdomen confirmed that he had sigmoid colon carcinoma which was localised. His blood results showed that he had a urea of 15 mmol/l and creatinine 180  $\mu$ mol/l. Urine dip stick showed protein ++++ and blood +. A renal biopsy was performed. Shortly after this, the patient underwent a colectomy as an inpatient. He recovered well and was discharged. A follow up appointment was arranged to review the renal biopsy result it was observed that the proteinuria improved.

*What is the likely histology of the glomerular lesion?*

- 1- Minimal change glomerulonephritis
- 2- Membranoproliferative glomerulonephritis



- 3- Membranous nephropathy
- 4- Focal segmental glomerulosclerosis
- 5- IgA nephropathy

#### Answer & Comments

**Answer:** 3- Membranous nephropathy

The scenario shows nephrotic range glomerular disease, as this resolved after the colectomy it suggests an association which is most likely membranous nephropathy associated with carcinoma.

Membranous nephropathy is caused by circulating immune complexes which are formed by binding of antibodies to antigens in the glomerular basement membrane.

85 % of membranous nephropathy cases are idiopathic.

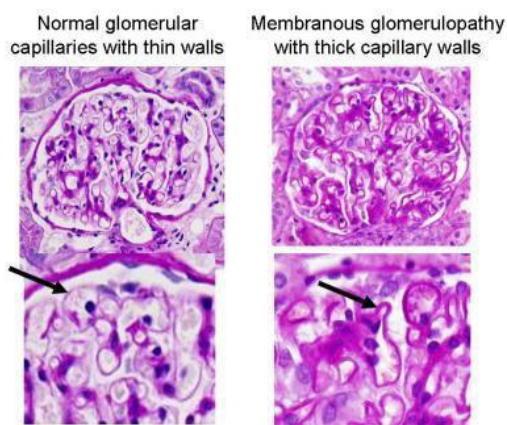
About 15% of cases are secondary due to:

autoimmune conditions (e.g., systemic lupus erythematosus)

infections (e.g., syphilis, malaria, hepatitis B)

drugs (e.g., captopril, NSAIDs, gold, mercury, penicillamine, probenecid).

tumors, frequently solid tumors of the lung and colon; hematological malignancies such as chronic lymphocytic leukemia are less common.



[ Q: 2258 ] MRCPass - 2011 May

A 62 year woman has presented with new sudden jerky movements of her arm. She has a history of diabetes mellitus and is on insulin. She describes sudden onset of wild flinging movements of left arm which are worse when she is doing physical work. When she rests the movements appear to lessen. This movement can occur up to every few minutes.

*Where is the likely site of the lesion?*

- 1- Substantia nigra
- 2- Contralateral subthalamic nucleus
- 3- Non dominant parietal
- 4- Caudate nucleus
- 5- Cerebellar

#### Answer & Comments

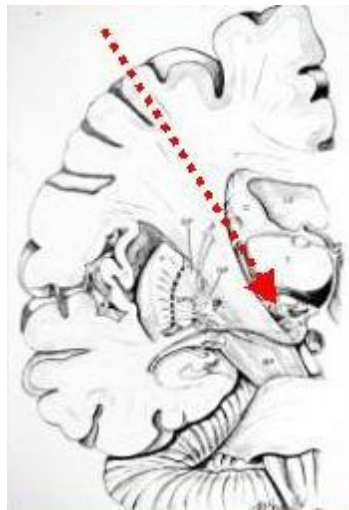
**Answer:** 2- Contralateral subthalamic nucleus

The hemiballismus (swinging arm movements) is likely be due a lesion in the subthalamic nucleus. The movements are often violent and have wide amplitudes of motion.

They can be continuous and random. The facial muscles, arms and legs can be involved. The more a patient is active, the more the movements increase. With relaxation comes a decrease in movements.

The subthalamic nucleus innervates other structures within the basal ganglia, including a very important connection to the inside of the globus pallidus. The subthalamic nucleus essentially provides the excitement needed to drive the globus pallidus. Injury to the subthalamus or its efferent or afferent connections can induce hemiballismus. Although traditionally thought that the disorder was only caused by injury to the subthalamic nucleus, new studies show that damage to other areas of the brain can also be responsible for causing this disorder.

Causes can be due to a vascular lesion (stroke), trauma, neurodegeneration (motor neuron disease) and demyelination.



Subthalamic Nucleus



[ Q: 2259 ] MRCPass - 2011 May

A 51 year old man with a past history of alcohol abuse presents with a painful red and warm ankle which was tophaceous. Gout was diagnosed and he was prescribed allopurinol.

*What is allopurinol's mechanism of action?*

- 1- Uricosuric drug
- 2- Non steroidal anti inflammatory drug
- 3- Microtubule inhibitor
- 4- Xanthine oxidase inhibitor
- 5- Dihydrofolate reductase inhibitor

#### Answer & Comments

Answer: 4- Xanthine oxidase inhibitor

Hypouricaemic agents essentially comprise of xanthine oxidase inhibitors (for example, allopurinol) and uricosuric agents (for example, probenecid, sulphinpyrazone or azapropazone).

Standard teaching is that urate lowering drugs should not be introduced during an acute episode as it may worsen or prolong the

episode; furthermore initiation of hypouricaemic treatment may precipitate acute gout. Colchicine and NSAIDs can be used in the acute situation.



[ Q: 2260 ] MRCPass - 2011 May

A 53 year old patient was referred to the outpatient clinic with a history of recurrent pruritic lesions of 9 months' duration, which were initially located on the elbows, periumbilical areas, and subsequently on the back and shoulders. The patient reported that milky-white areas of skin had appeared 4 years previously, and these areas had remained unchanged. He had not sought any treatment for this condition. A dermatologist suspects dermatitis herpetiformis.

*What should be done to confirm this?*

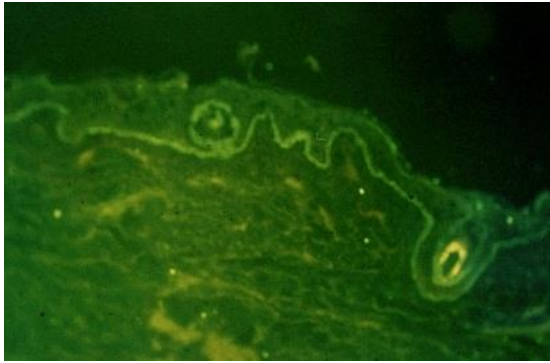
- 1- Anti gliadin antibody
- 2- Anti endomysial antibody
- 3- Small bowel biopsy of the intestine
- 4- immunofluorescence of perilesional skin for IgA
- 5- Trial of steroids

#### Answer & Comments

Answer: 4- immunofluorescence of perilesional skin for IgA

In dermatitis herpetiformis, the biopsy sample should be taken from the edge of a lesion for hematoxylin and eosin staining and from normal-appearing perilesional skin for direct immunofluorescence staining.

Granular IgA deposits in dermal papillae of perilesional skin observed by direct immunofluorescence is the criterion standard of diagnosis.



Direct immunofluorescence with linear IgA deposits along the dermal epidermal junction



[ Q: 2261 ] MRCPass - 2011 May

A 42 year old type I diabetic is referred for renal investigations. She has been suffering from Rheumatoid arthritis for the last 20 years. She is currently on insulin injections, ibuprofen and penicillamine. She had 4 + proteinuria on a urine dipstick and quantification with 24 hour urine collection revealed that she had urinary protein > 4.5 g/day.

Ultrasound of the abdomen shows increased renal echogenicity.

Investigations :

Hb 11.5 g/dl

MCV 82 fl

WCC  $12 \times 10^9/l$

platelets  $225 \times 10^9/l$

sodium 135 mmol/l

potassium 4.5 mmol/l

Urea 14 mmol/l

Creat 215 umol/l

A renal biopsy shows eosinophilic deposits within the mesangium on light microscopy. The basement membrane and epithelial space is normal.

*What is the probable diagnosis?*

- 1- Minimal change nephropathy
- 2- Membranous nephropathy
- 3- Diabetic nephropathy

4- NSAIDS induced nephropathy

5- Amyloidosis

#### Answer & Comments

Answer: 5- Amyloidosis

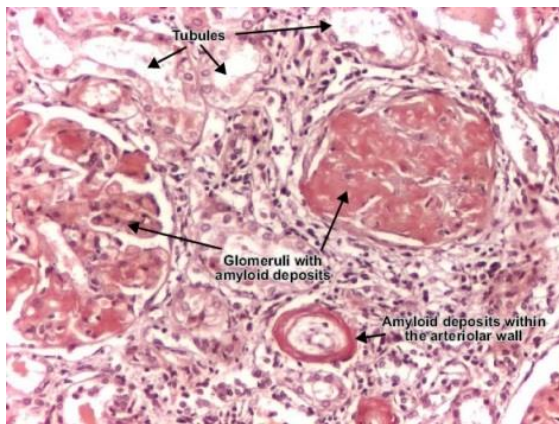
Diabetic nephropathy is unlikely to cause such heavy proteinuria, hence amyloidosis due to rheumatoid arthritis is the most likely diagnosis.

Amyloidosis is a clinical disorder caused by extracellular and or intracellular deposition of insoluble abnormal amyloid fibrils that alter the normal function of tissues. AA amyloidosis can be caused by rheumatoid arthritis. Up to 5% of patients with long-standing RA can develop systemic amyloidosis that usually presents as nephrotic syndrome. The biopsy shows eosinophilic deposits in the mesangium and capillary walls, which can be stained pink with Congo Red.

Membranous nephropathy can present similarly, but is more commonly associated with autoimmune diseases (e.g.

SLE), infections (e.g. hepatitis B) and malignancy (e.g. lymphoma). The drugs for rheumatoid arthritis ie NSAIDS, penicillamine gold can cause membranous nephropathy. The renal biopsy will show small subepithelial deposits in the glomeruli which can also lead to spikes or thickening of the basement membrane but the mesangium is typically normal.

This case is also unlikely to be minimal change disease - (age of onset usually younger), the histology shows in minimal change shows a normal glomerulus and fusion of epithelial foot process will be seen only on electron microscopy.



[ Q: 2262 ] MRCPass - 2011 May

A 60 year old man presented with back pain. On examination, he had normal tone bilaterally. There was absent ankle jerk reflex on the right. He also had decreased touch and pain sensation on the lateral side of the right. The plantar reflex was normal on the left and upgoing on the right. The anal tone was normal and there was no evidence of saddle anaesthesia.

*What is the likely diagnosis?*

- 1- Peripheral neuropathy
- 2- Lumbar spinal canal stenosis
- 3- Cauda equina
- 4- Posterolateral disc prolapse at L5-S1
- 5- Subacute combined degeneration of the cord

#### Answer & Comments

Answer: 4- Posterolateral disc prolapse at L5-S1

A prolapsed intervertebral disc typically causes lower back pain and pain radiating down the legs (sciatica).

The L5/S1 disc is the disc most commonly damaged. With a posterolateral herniation, disc will affect the nerve corresponding to the lower level in this case S1. The absent ankle reflex and lateral foot sensory loss is consistent with an S1 root lesion.

If the prolapse is very large and presses on the spinal cord or the cauda equina syndrome may occur. Compression of the cauda equina can cause permanent nerve damage or paralysis. In cauda equina syndrome, the nerve damage can result in bilateral leg weakness and pains, saddle anaesthesia and loss of bowel and bladder control as well as sexual dysfunction.



[ Q: 2263 ] MRCPass - 2011 May

A 18 year woman with mild Von Willebrand's disease was scheduled for dental extraction. A previous dental extraction resulted in bleeding and had required two units of blood for transfusion.

*What is the appropriate treatment prior to dental surgery?*

- 1- Cryoprecipitate
- 2- DDAVP
- 3- Fresh frozen plasma
- 4- High purity factor VIII concentrate
- 5- Recombinant factor VIII concentrate

#### Answer & Comments

Answer: 2- DDAVP

DDAVP is the treatment of choice for mild disease, which would include Type I, majority of Type II.

It of limited use in Type III - severe Von Willebrand's disease. The history indicates that she has mild disease. For severe disease one would use a Von Willebrand factor concentrate, factor VIII concentrate.



[ Q: 2264 ] MRCPass - 2011 May

A 63- year-old male was admitted with a history of severe recurrent attacks of central abdominal pain radiating to both hypocondria, occasionally associated with vomiting. He used to be a heavy smoker and admitted to a moderate alcohol consumption.



On examination, he had no signs of chronic liver disease and there were no palpable masses.

*What is the investigation of choice to confirm suspected chronic pancreatitis?*

- 1- Endoscopic ultrasound
- 2- CT scan of the abdomen
- 3- Barium enema
- 4- Colonoscopy
- 5- Flexible sigmoidoscopy

#### Answer & Comments

Answer: 2- CT scan of the abdomen

A secretin stimulation test is considered the gold standard functional test for diagnosis of chronic pancreatitis.

CT scan of the abdomen is useful because longstanding inflammation often causes calcification of the pancreas.



[ Q: 2265 ] MRCPass - 2011 May

A 58 patient has been admitted with confusion. The patient's relatives describe that he does not remember the events that occurred in the last day but recognised them. He also seemed to make up events which he did not remember. On examination, he had an MMSE score of 22 / 30. He was tremulous in both his hands and had an ataxic gait. Tone, power and reflexes were normal in both upper and lower limbs.

*What is the likely diagnosis?*

- 1- Alzheimer's dementia
- 2- Lewy body disease
- 3- Korsakoff's psychosis
- 4- Creutzfeldt Jakob disease
- 5- Normal pressure hydrocephalus

#### Answer & Comments

Answer: 3- Korsakoff's psychosis

Alcohol withdrawal delirium (delirium tremens) is the clinical syndrome of disorientation, perceptual disturbance and psychomotor agitation.

Visual hallucinations are commonly associated.

Korsakoff's psychosis is associated short term memory loss, subsequent compensatory confabulation by patient.

Other symptoms may include delirium, anxiety, fear, depression, confusion, delusions and insomnia.



[ Q: 2266 ] MRCPass - 2011 May

*What is the mode of inheritance of the disease Hereditary Haemorrhagic Telangiectasia?*

- 1- Autosomal recessive
- 2- Autosomal dominant
- 3- X-linked dominant
- 4- X-linked recessive
- 5- Polygenic inheritance

#### Answer & Comments

Answer: 2- Autosomal dominant

There are four forms of Hereditary Hemorrhagic Telangiectasia.

Inheritance is autosomal dominant. HHT 1 is associated with a mutation in the endoglin gene, and HHT 2 is associated with a mutation in the alk1 gene.

HHT is characterised by telangiectasia (small vascular malformations on the skin and mucosal linings (as shown in the diagram below ), epistaxis (nosebleeds), and arteriovenous malformations (AVMs) in various internal organs.



[ Q: 2267 ] MRCPass - 2011 May

A 16 year old boy presents with discoloured urine. He describes having had a sore throat 5 days ago but has recovered from the symptoms. The urine dipstick shows blood +++, protein +. Renal function was normal on the blood tests. A renal biopsy is likely to show which of the following on light microscopy?

- 1- Crescents
- 2- Collapsed glomeruli
- 3- Normal tissue
- 4- Segmental glomerulosclerosis
- 5- Mesangial hypercellularity

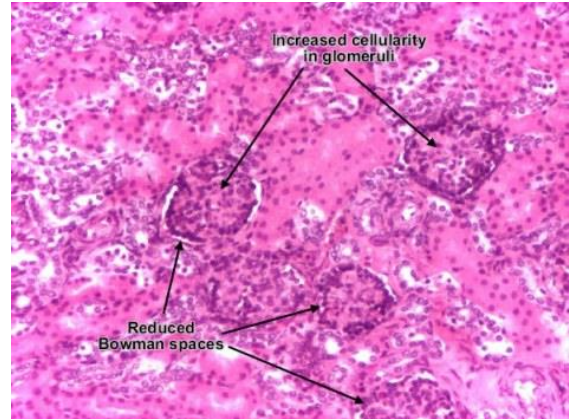
#### Answer & Comments

**Answer:** 5- Mesangial hypercellularity

The age, sex and almost simultaneous presentation of sore throat with haematuria suggests IgA nephropathy.

It is a common cause of macroscopic haematuria in a child. It also occurs commonly in young adults. Episodes of haematuria are often simultaneous with periods of viral infection (sore throat) and flank pain. The urine may be frankly bloody or may be cola colour. There are clots in urine. It usually resolves spontaneously within

4-7 days. Renal biopsy will show mesangial IgA deposition on immunofluorescence, light microscopy will show mesangial hypercellularity with matrix expansion.



[ Q: 2268 ] MRCPass - 2011 May

An 18 year old girl with meningococcal meningitis has further investigations as this is her 3rd episode of meningitis. It was found that she had low properdin levels measured by the ELISA test. How is this likely to have been inherited?

- 1- Autosomal dominant
- 2- Autosomal recessive
- 3- X linked recessive
- 4- X linked dominant
- 5- Mitochondrial inheritance

#### Answer & Comments

**Answer:** 3- X linked recessive

Complement deficiencies are relatively rare worldwide, and estimates of prevalence are based on results from screening high-risk populations.

Retrospective studies of persons with frequent meningococcal infections report

varying prevalence based on geographic location. In populations with recurrent meningococcal infection, the prevalence rate is as high as 30%.

The majority of complement deficiencies are inherited in an autosomal recessive pattern. An exception to the autosomal pattern of inheritance is properdin deficiency, which is an X-linked trait.



The pathways include the classic pathway (C1qrs, C2, C4), the alternative pathway (C3, factor B, properdin).

Properdin stabilizes the C3 convertase (C3bBb) of the alternative pathway, involved in opsonisation. Meningococcal disease is a prominent manifestation in a significant fraction of reported cases in all clinical patterns of complement deficiency, particularly those where opsonisation is defective. Properdin deficiency states are X-linked recessive, while other genetic defects within the complement system appear to be transmitted as autosomal recessive traits.



[ Q: 2269 ] MRCPass - 2011 May

A 20 year old female is referred to the hospital. Her family are concerned about her because she has been very agitated in the last 2 days. She has no past medical history of note. The sister said that she was hearing voices.

On examination, she looks restless and physical examination is normal.

*What is the likely cause of this presentation?*

- 1- Alcohol
- 2- Barbiturates
- 3- Diazepam
- 4- Amphetamines
- 5- Opiates

#### Answer & Comments

Answer: 4- Amphetamines

This patient is likely to have taken a stimulant which has made her restless and agitated with some psychotic features.

The most common stimulants taken as recreational drugs are amphetamines and cocaine.



[ Q: 2270 ] MRCPass - 2011 May

A 70 year old lady has longstanding lethargy. On physical examination she had a plethoric face & conjunctival injection. Investigations revealed:

hemoglobin 17.5 g/dl (12-16 g/dl)

red cell count 8.1 M/?l (3.5 to 6 M/?l)

Hct. 58.% (37 to 52%)

MCV 65.7fL (67 to 96 fL)

MCH 19.6 pg (27 to 32 pg)

WBC 13.1 x 10<sup>9</sup>/l

ESR 2 mm/hour

Blood film showed erythrocytosis, thrombocytosis and leucocytosis.

With the diagnosis in mind, which one of the following is likely to be associated?

- 1- JAK2 mutation
- 2- P53 mutation
- 3- EGFR mutation
- 4- NPAT mutation
- 5- MYD88 mutation

#### Answer & Comments

Answer: 1- JAK2 mutation

The diagnosis in this case is polycythaemia rubra vera.

Janus kinase 2 (commonly called JAK2) is a human protein

that has been implicated in signaling by members of the type II cytokine receptor family. These mutations have been associated with polycythemia vera, essential thrombocythemia, and other myeloproliferative disorders.



[ Q: 2271 ] MRCPass - 2011 May

A 55 year old lady presents with sudden onset bilateral lower limb weakness half a day ago. On examination there was loss

of pain and temperature sensation (T12 downwards) but joint position sense and vibration sense was preserved bilaterally. Both the lower limbs were hyperreflexic with upgoing plantars.

*What is the diagnosis?*

- 1- Severe combined degeneration of the cord
- 2- Anterior spinal artery infarction
- 3- Multiple sclerosis
- 4- Brown Sequard Syndrome
- 5- Motor neuron disease

#### Answer & Comments

Answer: 2- Anterior spinal artery infarction

The typical clinical features of spinal artery infarction include:

-sudden radicular pain and para- or quadraparesis

-limbs initially flaccid but within days, become spastic

-reflexes initially absent but within days, become hyper-reflexic with extensor plantars

-loss of pain and temperature sensation up to the level of cord damage - due to involvement of anterolateral

spinothalamic tracts

-urinary and faecal incompetence from lesions in the lower lumbar / sacral areas



[ Q: 2272 ] MRCPass - 2011 May

*Which one of the following techniques is used to detect DNA using a labelled probe for hybridisation?*

- 1- Northern blotting
- 2- Southern blotting
- 3- Eastern blotting
- 4- Western blotting
- 5- Polymerase chain reaction

#### Answer & Comments

Answer: 2- Southern blotting

A Southern blot is a method routinely used in molecular biology for detection of a specific DNA sequence in DNA samples.

Southern blotting combines transfer of electrophoresis-separated DNA fragments to a filter membrane and subsequent fragment detection with a hybridisation probe.

The northern blot is a technique used in molecular biology research to study gene expression by detection of RNA in a sample. Northern blotting involves the use of electrophoresis to separate RNA samples by size, and detection with a hybridization probe (either DNA or RNA) complementary to part gene sequence.

The Western blot is a technique involving electrophoresis to detect specific proteins in the given sample of tissue homogenate or extract (e.g. in HIV testing, or to detect prions in Bovine Spongiform Encephalopathy).



[ Q: 2273 ] MRCPass - 2011 May

A 30 year old caucasian man presented with 2 weeks of gradually worsening vision in his left eye with alterations in seeing colours. The patient also describes pressure and tightness with left eye movement for the past week. The patient reported his vision in the left eye worsened when showering. On examination, there was no ptosis. His pupils were reactive to light, and there was a left afferent pupillary defect. Slit lamp exam was normal. Goldmann visual fields and showed a central scotoma on the left.

*What is the likely diagnosis?*

- 1- Acute glaucoma
- 2- Optic neuritis
- 3- Retinitis pigmentosa
- 4- Anterior uveitis

## 5- Retinal vein thrombosis

surface of the plasma membrane and transmembrane receptors of hormones.

## Answer &amp; Comments

Answer: 2- Optic neuritis

Optic neuritis typically presents with a triad of symptoms: loss of vision, colour changes and eye pain.

The initial attack is unilateral in 70% of adult patients and bilateral in 30%. The mean age of onset of optic neuritis is in the third decade of life, but can occur FROM the first to the seventh decades. Associated visual symptoms are reduced perception of light intensity and Uhthoff's symptom (visual deficit induced by exercise or increased body temperature). The visual loss may be subtle or profound.

The most common etiology is multiple sclerosis. Up to 50% of patients with MS will develop an episode of optic neuritis. Some other causes of optic neuritis include infection ( Syphilis, Lyme disease, herpes zoster), autoimmune disorders (SLE) and drugs (e.g. chloramphenicol, Ethambutol).



[ Q: 2274 ] MRCPass - 2011 May

G-proteins coupled receptors are located in which part of the cell?

- 1- Cell membrane
- 2- Mitochondrion
- 3- Nucleus
- 4- Cytoplasm
- 5- Nuclear membrane

## Answer &amp; Comments

Answer: 1- Cell membrane

G proteins are so-called because they bind the guanine nucleotides GDP and GTP.

They are heterotrimers (i.e., made of three different subunits) associated with the inner



[ Q: 2275 ] MRCPass - 2011  
September

A 55-year-old woman presents with periods of sweats and tremors which are relieved by eating. She has gained approximately 6 kg in weight in the last 2 years. Her BM is 4.5. Blood tests are: Hb 13 g/dl, MCV 78 fl, WCC  $7 \times 10^9/l$ , platelets  $200 \times 10^9/l$ , sodium 135 mmol/l, potassium 4.7 mmol/l, urea 5 mmol/l, creatinine 100  $\mu\text{mol/l}$ , TSH - 3.3 (0.3-4) mU/l, free T4 -20 (10-24) pmol/l.

*What is the most appropriate investigation?*

- 1- 72 hour fast
- 2- CT scan of pancreas
- 3- MRI of the brain
- 4- Insulin C-peptide concentration
- 5- Oral glucose tolerance test

#### Answer & Comments

Answer: 1- 72 hour fast

This patient has symptoms suggestive of hypoglycaemia which are relieved by carbohydrate.

The likely cause is an insulinoma which is an insulin secreting pancreatic tumour.

The best way of confirming the diagnosis is with a 72 hour fast. During the fast, the patient with an insulinoma may get episodes of hypoglycaemia with measured inappropriately high insulin C peptide (endogenous insulin).

Measurement of C-peptide is useful in excluding factitious hypoglycaemia from self injection of insulin. Insulin preparations do not contain C-peptide.



[ Q: 2276 ] MRCPass - 2011  
September

A 31 year old female patient was referred by the GP for assessment of unequal sized pupils. On examination, it was found that the right

pupil was larger than the left. The pupillary reflex on the right eye was also sluggish both to light and accommodation. Eye movements and fundoscopy were normal.

*What is the diagnosis?*

- 1- Argyll Robertson pupil
- 2- Horner's syndrome
- 3- Holmes Adie pupil
- 4- Myasthenia gravis
- 5- 3rd nerve palsy

#### Answer & Comments

Answer: 3- Holmes Adie pupil

Holmes-Adie syndrome (HAS) is a neurological disorder affecting the pupil of the eye and the autonomic nervous system.

It is characterised by one eye with a pupil that is larger than normal and constricts slowly in bright light (tonic pupil), along with the absence of deep tendon reflexes, usually in the Achilles tendon. HAS is thought to be the result of a viral or bacterial infection that causes inflammation and damage to neurons in the ciliary ganglion. It is more common in women than men.



[ Q: 2277 ] MRCPass - 2011  
September

A 41-year-old female patient presents with a 1-year history of recurrent episodes of vertigo. The vertigo spells are described as a sensation of the room spinning that lasts from 20 minutes to a few hours and may be associated with nausea and vomiting. The spells are incapacitating and are accompanied by dizziness, vertigo, and disequilibrium, which may last for days.

The patient also reports tinnitus, and hearing loss in the right ear that is more pronounced around the time of her vertigo spells. Physical examination of the head and neck is normal. There was no nystagmus. She is unable to

maintain her position during Romberg's testing. She turns towards the right side and she is unable to walk tandem. Her cerebellar function tests are normal.

*What is the diagnosis?*

- 1- Cerebellar disorder
- 2- Vestibular neuronitis
- 3- Meniere's disease
- 4- Labyrinthine disease
- 5- Internuclear ophthalmoplegia

#### Answer & Comments

Answer: 3- Meniere's disease

Ménière's disease is a disorder of the inner ear that can affect hearing and balance to a varying degree.

It is characterized by episodes of vertigo and tinnitus and progressive hearing loss, usually in one ear. Nystagmus can occur, but is not typical. Vestibular neuronitis and labyrinthine disease do not typically cause deafness.



[ Q: 2278 ] MRCPass - 2011  
September

A 26 year-old woman with a history of depression is brought to the hospital with decreased conscious level and a brief seizure. She had taken an overdose of tricyclic antidepressants 12 hours prior. Her GCS is 12/15, she is tachycardic to 120 bpm and her blood pressure is 96/62 mmHg. She appears flushed and her skin is dry. A blood gas shows:

pH -7.15

pO<sub>2</sub> -13.3 kPa

pCO<sub>2</sub> -3.5 kPa

base excess - negative 8.5

*What should be given?*

- 1- Gastric Lavage
- 2- Charcoal
- 3- 8.4% bicarbonate infusion

- 4- Naloxone infusion
- 5- Flumazenil infusion

#### Answer & Comments

Answer: 3- 8.4% bicarbonate infusion

Many of the initial signs in tricyclic antidepressant (TCA) overdose are associated to the anticholinergic effects of TCAs such as dry mouth, blurred vision, urinary retention, constipation, dizziness and vomiting.

In a patient who is acidotic who is at risk of cardiac arrhythmias and seizures, serum bicarbonate is recommended.



[ Q: 2279 ] MRCPass - 2011  
September

A 56 year old man with schizophrenia has been prescribed olanzepine.

*Which one of the following is a side effect?*

- 1- Hirsutism
- 2- Impotence
- 3- Diarrhoea
- 4- Weight gain
- 5- Malignancy

#### Answer & Comments

Answer: 4- Weight gain

Olanzapine is an antipsychotic which is said to block serotonin receptors.

Antagonism of dopamine receptors is associated with extrapyramidal effects such as tardive dyskinesia. Antagonizing H1 histamine receptors causes sedation and may cause weight gain (90% of users). Dry mouth, sedation and urinary retention are other side effects.



[ Q: 2280 ] MRCPass - 2011  
September

A 25 year old lady returned from Hong Kong (she had been there for 2 months). 2 weeks after she returned to the UK and she complained of fever, chills, severe myalgias and arthralgia. Past medical, surgical, family history and review of systems were unremarkable. On examination, temperature was 39.6 C. There was a generalized petechial rash in the lower part of the body. Her blood tests revealed the following results:

Hb 11.0 g/dl,

WCC  $12 \times 10^9/l$ ,

platelets  $250 \times 10^9/l$

aspartate transaminase (AST) of 319 (1-31) U/L

alanine transaminase (ALT) of 198 (5-35) U/L

alkaline phosphatase of 74 (20-120) U/L

*What is the most likely diagnosis?*

- 1- Dengue fever
- 2- Typhoid fever
- 3- Lassa virus
- 4- Acute HIV infection
- 5- p falciparum malaria

#### Answer & Comments

Answer: 1- Dengue fever

Fever, thrombocytopenia and petechial rash are typical of dengue fever.

Dengue fever is caused by a mosquito-transmitted flavivirus that is endemic throughout much of the tropical world. Symptoms arise 4-7 days after the bite of a mosquito, but can be as short as 3 days or as long as 14 days following insect exposure. The clinical syndrome of classic dengue fever is characterized initially by headache, retro-orbital eye pain, and severe myalgias and arthralgias originally termed "breakbone"

fever. Rash, gastrointestinal pain, and diarrhea are common manifestations of the syndrome.

The fever typically lasts for 5-7 days. It is often self-limiting. Upon resolution of the fever, patients may run the risk of hemorrhagic symptoms (epistaxis, ecchymoses, and gastrointestinal bleeding) and plasma leakage syndrome (hemoconcentration, ascites, or pleural effusions) called dengue hemorrhagic fever. Dengue hemorrhagic fever may have a mortality of 5% in those untreated. Treatment is supportive (e.g. iv fluids)



[ Q: 2281 ] MRCPass - 2011  
September

A 63 year old man presents with an episode of amnesia for the second time in two months. 2 days ago he had an episode of confusion, according to his wife. He was, However, able to have a normal conversation despite having been found wandering. After 2 hours, he abruptly returned to normal and could not remember what happened.

*What is the most likely diagnosis?*

- 1- Alcoholic encephalopathy
- 2- Subarachnoid haemorrhage
- 3- Complex partial seizure
- 4- Transient ischaemic attack
- 5- Transient global amnesia

#### Answer & Comments

Answer: 5- Transient global amnesia

Transient global amnesia (TGA) is a syndrome in clinical neurology whose key defining characteristic is temporary but almost total disruption of short-term memory with a range of problems accessing older memories.

A person in a state of TGA exhibits no other signs of impaired cognitive functioning but recalls only the last few moments of consciousness plus deeply-encoded facts of the individual's past, such as his or her own



name. It may last several hours. The most commonly cited precipitating events include vigorous exercise (including sexual intercourse), swimming in cold water or enduring other temperature changes, and emotionally traumatic or stressful events.



[ Q: 2282 ] MRCPass - 2011  
September

A 67 year old lady has epigastric pain for several months and is referred for endoscopy. Biopsy confirms MALT lymphoma.

*What is the treatment of choice?*

- 1- Chemotherapy
- 2- Radiotherapy
- 3- Interferon
- 4- Surgery
- 5- H.pylori eradication

#### Answer & Comments

Answer: 5- H.pylori eradication

Most cases of MALT lymphoma affecting the stomach are associated with infection by a bacterium called *Helicobacter pylori* (often abbreviated to H.

*pylori*). If tests confirm its presence then a course of intensive antibiotic treatment will sometimes lead to a remission of the lymphoma.



[ Q: 2283 ] MRCPass - 2011  
September

A 50-year-old woman was admitted because of progressive shortness of breath. She has been a smoker of 5 cigarettes a day for the past two years. She has a past medical history of seropositive rheumatoid arthritis,

diabetes mellitus and hypertension. On examination the fingers were clubbed and there were bilateral basal crepitations.

Lung function tests showed :

forced expiratory volume in one second (FEV1) of 2.09 l (predicted 3.18 l)

forced vital capacity (FVC) of 2.33 l (predicted 4.04).

Carbon monoxide transfer factor (TLCO) was reduced to 67% predicted.

There was 5% improvement following salbutamol nebulisers.

*What is the likely diagnosis?*

- 1- COPD
- 2- Asthma
- 3- Pulmonary embolus
- 4- Interstitial lung disease
- 5- Pneumothorax

#### Answer & Comments

Answer: 4- Interstitial lung disease

Although there is slight improvement with salbutamol, the best answer is interstitial lung disease / pulmonary fibrosis.

The FEV1 / FVC ratio is 90% which suggests restrictive lung disease rather than obstructive lung disease.

There is also reduced transfer factor. This is likely to be due to the history of rheumatoid arthritis in this case.



[ Q: 2284 ] MRCPass - 2011  
September

A 36 year old caucasian female presented with malaise, joint pains , Raynaud's phenomenon and shortness of breath for the last 6 months. On physical examination she was afebrile and had a supine blood pressure of 110/80mm Hg. Her apex beat was displaced, she had a loud P2 and a right ventricular heave. There were fine basal crepitations in both lung bases on auscultation. Blood tests revealed:

Hb 11.5 g/dl, MCV 85 fl

erythrocyte sedimentation rate of 80 mm/first hour

sodium 135 mmol/l

potassium 4.5 mmol/l

urea 18 mmol/l

creatinine 285 µmol/l

antinuclear antibody (ANA) - strongly positive

antitopoisomerase I antibody (formerly anti SCL-70 antibody) positive

normal C3 and C4

anti-DNA, anti-centromere, anti-RNP, anti-Ro and La antibodies - negative

*What is the likely diagnosis?*

- 1- Hereditary haemorrhagic telangiectasia
- 2- Sjogren's syndrome
- 3- Wegener's granulomatosis
- 4- Oesophageal carcinoma
- 5- Diffuse systemic sclerosis

#### Answer & Comments

Answer: 5- Diffuse systemic sclerosis

The patient is likely to have a diffuse form of scleroderma.

The limited cutaneous form of scleroderma is CREST syndrome (calcinosis, raynauds, esophageal dysmotility, sclerodactyly and telangiectasia).

The diffuse form of scleroderma is more rapidly progressing and affects the skin (cutaneous scleroderma) and one or more internal organs, frequently the kidneys (renal crisis), esophagus, heart (pulmonary hypertension) and lungs (pulmonary fibrosis).

In diffuse scleroderma, antinuclear antibodies are present in about 95% of patients.

Topoisomerase I antibodies (formerly Scl-70) are present in approximately 30% of patients with diffuse disease (absent in limited disease) and are associated with pulmonary fibrosis.



[ Q: 2285 ] MRCPass - 2011  
September

A blood test has been used to screen for the likelihood of gastric cancer. The results are as follows:

	Cancer Diagnosed	No Cancer
Positive	60	60
Negative	80	40

*What is the positive predictive value?*

- 1- 25%
- 2- 33.3%
- 3- 50%
- 4- 60%
- 5- 66.6%

#### Answer & Comments

Answer: 3- 50%

The positive predictive value of a test is the probability that the patient has the disease when restricted to those patients who test positive.

This term is sometimes abbreviated as PPV. You can compute the positive predictive value as

$$PPV = TP / (TP + FP)$$

where TP and FP are the number of true positive and false positive results, respectively. In this case, the TP is 60, FP is 60 and PPV is  $60/120 = 50\%$ .



[ Q: 2286 ] MRCPass - 2011  
September

A 42-year-old female presented with an erythematous annular patch with central clearing on her left foot. She has returned from a walking holiday 1 week ago. The patient mentioned that the rash has gotten progressively larger and spreading up the leg over the last 3 weeks and she has had a recent onset of intermittent joint pains.

On examination, there is a large area of erythema with a central clearing over the calf and the foot.

*What test is likely to confirm the diagnosis?*

- 1- Borrelia burgdoferi
- 2- Wuchereria bancrofti
- 3- Spirochaetes
- 4- Echinococcus granulosus
- 5- Trypanosomiasis cruzi

#### Answer & Comments

Answer: 1- Borrelia burgdoferi

Lyme Disease (LD) is a multisystem disease affecting the nervous system, skin, joints, and heart.

It is endemic in the

temperate regions of the northern hemisphere (United States, Europe, Canada). Erythema migrans (EM), the characteristic dermatologic lesion of LD, is an expanding red papule or macule with central clearing, often found in the axilla, midriff, or popliteal areas.

B. burgdorferi is transmitted by the tick Ixodes, a hard bodied tick found in wooded areas. Lyme disease occurs in 3 stages: early localized, early disseminated, and late. If left untreated, each stage progresses to the next. Early localized disease manifests within 3-30 days presenting with erythema migrans (EM), myalgia, fatigue, headache, fever, lymphadenopathy, and arthralgia. Early disseminated disease occurs 30 to 120 days post-infection and is characterized by EM (single or multiple), fatigue, lymphadenopathy, conjunctivitis, neck pain, cardiac abnormalities, radiculoneuritis, arthritis, and CNS manifestations. Late disease manifests from 4 months to 1 year, presenting with fatigue, chronic arthritis, CNS manifestations, and encephalopathy.

First-line treatment for early disease is doxycycline (100 mg PO twice a day for 14 to

21 days) or amoxicillin (500 mg PO three times a day for 14 to 21 days).



[ Q: 2287 ] MRCPass - 2011  
September

A 18 year old man has presented for investigation with haematuria. On his urine dipstick, there were blood ++.

When enquired about family history, he said his father and older brother also had haematuria. An ANCA and ANA screen was done with negative results. An ultrasound of the kidney was normal and his creatinine was 80 umol/l.

*What is the likely diagnosis?*

- 1- Polyarteritis nodosa
- 2- Systemic lupus erythematosus
- 3- Alport's syndrome
- 4- Ig A nephropathy
- 5- Exercise induced haematuria

#### Answer & Comments

Answer: 3- Alport's syndrome

Alport's syndrome leads to a glomerulonephritis.

It is a primary basement membrane disorder arising from mutations in genes encoding several members of the type IV collagen protein family. The disease is mainly inherited in the X linked form. In males, there is only one X chromosome, so the disease tends to manifest in males with the immediate family as suggested above.

The clinical manifestations include recurrent episodes of gross hematuria, especially in childhood, as in the case vignette. Hypertension, proteinuria and sensorineural hearing loss can take place although those clues were not given in this scenario.



[ Q: 2288 ] MRCPass - 2011  
September

A 28 year old girl develops sudden onset left sided weakness and dysarthria which resolves fairly promptly. She has just returned from Australia 2 days previously. Physical examination is normal.

*What test is likely to identify the underlying cause?*

- 1- Transthoracic echocardiogram
- 2- Transoesophageal echocardiogram
- 3- Carotid dopplers
- 4- MRI of the brain
- 5- EEG

#### Answer & Comments

Answer: 2- Transoesophageal echocardiogram

This patient had a transient ischaemic attack.

As she is young, she is most likely to have a patent foramen ovale which will be diagnosed with a transoesophageal echocardiogram (usually with a bubble contrast study)



[ Q: 2289 ] MRCPass - 2011  
September

A 36 year old lady has Crohn's disease with poorly controlled symptoms. She also has a history of chronic anaemia.

*Which enzyme should be checked before starting the drug azathioprine?*

- 1- Thiopurine methyltransferase
- 2- Glycogen phosphorylase
- 3- Creatinine kinase
- 4- Myeloperoxidase
- 5- Acetylcholinesterase

#### Answer & Comments

Answer: 1- Thiopurine methyltransferase

The purine analogues azathioprine and mercaptopurine are effective in inducing and maintaining remission in patients with ulcerative colitis and Crohn's disease.

Azathioprine is a prodrug which is converted to mercaptopurine and the enzyme thiopurine methyltransferase (TPMT) breaks down mercaptopurine. Deficiency of the enzyme is associated with a greater risk of myelosuppression.



[ Q: 2290 ] MRCPass - 2011  
September

A 43-year-old man has recently been diagnosed with non-Hodgkin's lymphoma. He has a long history of alcoholism and has significant alcohol-related peripheral neuropathy.

*Which one of the following chemotherapy agents should be avoided?*

- 1- Chlorambucil
- 2- Cyclophosphamide
- 3- Epirubicin
- 4- Vincristine
- 5- Rituximab

#### Answer & Comments

Answer: 4- Vincristine

Vincristine (brand name, Oncovin), also known as leurocristine, is a vinca alkaloid.

It works through disruption of the microtubules which in turns disrupts metaphase in mitosis. Its main uses are in non-Hodgkin's lymphoma as part of the chemotherapy regimen CHOP, Hodgkin's lymphoma as part of MOPP, COPP, BEACOPP.

The main side-effects of vincristine are peripheral neuropathy (which can be severe), hyponatremia and hair loss.



[ Q: 2291 ] MRCPass - 2011  
September

A 60 year old lady presented with a fall but did not sustain a fracture. She experienced menopause in her early 50s and initiated hormone therapy (HT) with es-trogen/progestin for her menopausal symptoms. She has polymyalgia rheumatica and has been on prednisolone for the last 1 year. She was organised to have a DEXA scan. This showed a T score of -2.6 in the hip.

*What should be prescribed?*

- 1- Vitamin D
- 2- Calcichew
- 3- Teriparatide
- 4- Bisphosphonates
- 5- Raloxifene

#### Answer & Comments

Answer: 4- Bisphosphonates

This patient is postmenopausal and is likely to have steroid related osteoporosis.

Bisphosphonates are thought to inhibit the activation and function of osteoclasts, and are the drug of choice in this scenario. Examples are Alendronate and risedronate, which are licensed for the treatment of osteoporosis in post-menopausal women, and the prevention of osteoporosis in those post-menopausal women considered to be at risk. The NICE guidelines recommend that bisphosphonates are used as treatment for preventing bone fractures in postmenopausal women who have had osteoporosis diagnosed but have not had a fracture.



[ Q: 2292 ] MRCPass - 2011  
September

A 59 patient has been admitted with confusion. The patient's relatives describe that he does not remember the events that occurred in the last day but recognised them.

He also seemed to make up events which he did not remember. On examination, he had an MMSE score of 22 / 30. He was tremulous in both his hands and had an ataxic gait. Tone, power and reflexes were normal in both upper and lower limbs.

*What is the likely diagnosis?*

- 1- Alzheimer's dementia
- 2- Lewy body disease
- 3- Korsakoff's psychosis
- 4- Creudsfeldt Jakob disease
- 5- Normal pressure hydrocephalus

#### Answer & Comments

Answer: 3- Korsakoff's psychosis

Alcohol withdrawal delirium (delirium tremens) is the clinical syndrome of disorientation, perceptual disturbance and psychomotor agitation.

Visual hallucinations are commonly associated.

Korsakoff's psychosis is associated short term memory loss, subsequent compensatory confabulation by patient.

Other symptoms may include delirium, anxiety, fear, depression, confusion, delusions and insomnia.



[ Q: 2293 ] MRCPass - 2011  
September

A 61 year old lady has pain in her knees, shoulders, wrists and fingers. Examination of her hands reveals multiple symmetrical small joint involvement. The proximal and distal joints were affected. Joint X rays show the presence of osteophytes and chondrocalcinosis. She is currently on bendrofluazide and metformin tablets. A urate level on admission was 420 (<380  $\mu\text{mol/l}$ ). The rheumatoid factor was positive with a titre of 1:30.

*What is the diagnosis?*

- 1- Polyarticular gout
- 2- Pseudogout
- 3- Systemic lupus erythematosus
- 4- Haemochromatosis
- 5- Rheumatoid arthritis

**Answer & Comments**

Answer: 2- Pseudogout

The diagnosis would fit with a subcategory of calcium pyrophosphate deposition disease.

Pseudogout is one manifestation of calcium pyrophosphate deposition disease, where joint aspiration fluid might show rhomboidshaped, positively birefringent crystals. It affects the knees most commonly and can involve the proximal interphalangeal (PIP) joints and spine. Osteophytes and chondrocalcinosis are a common radiological finding . In addition, older individuals may have low -titer-positive rheumatoid factor as in this case.



[ Q: 2294 ] MRCPass - 2011  
September

A 21 year old man was referred for pink discolouration of his urine to the hospital. He had no previous relevant medical history. 3 days ago he complained of a sore throat and was given a course of amoxicillin and ibuprofen by the GP but those symptoms have resolved now . On examination, he looked well. His blood pressure was 120/70 mmHg, temperature 36 C. There were normal abdominal examination and he had no palpable organomegaly. Urine dipstick showed blood ++, Protein +, nitrites negative.

*What is the most likely diagnosis?*

- 1- Crescentic glomerulonephritis
- 2- Wegener's granulomatosis
- 3- IgA nephropathy

- 4- Post streptococcal glomerulonephritis
- 5- Goodpasture's syndrome

**Answer & Comments**

Answer: 3- IgA nephropathy

IgA nephropathy is the most common glomerulonephritis and is characterized by deposition of the IgA antibody in the glomerulus.

The classic presentation (in 40-50% of the cases) is episodic frank hematuria which usually starts within a day or two of a non-specific upper respiratory tract infection. The common differential is post-streptococcal glomerulonephritis which typically occurs weeks after initial infection. The gross hematuria resolves after a few days, though microscopic hematuria may persist. Renal function usually remains normal. Mild proteinuria can also be associated.



[ Q: 2295 ] MRCPass - 2011  
September

A 43 year old man is known to have HIV. He develops multiple fleshy, red nodules on the trunk which were diagnosed as Kaposi's sarcoma.

*What is the aetiological agent?*

- 1- Cytomegalovirus
- 2- Epstein barr virus
- 3- Coronavirus
- 4- HHV 8
- 5- Parvovirus

**Answer & Comments**

Answer: 4- HHV 8

HHV-8, is a gammaherpesvirus found only in humans.

Kaposi's sarcoma (KS) is caused by Human herpesvirus 8 (HHV8) and frequently found in



patients with HIV infection. Kaposi's sarcoma lesions may appear like bruises but are papular. With time, they darken. Scarring is common following treatment with immunosuppressive drugs.



[ Q: 2296 ] MRCPass - 2011  
September

A 18 year old man has a history of 2 months of bumps in the left axilla. Initially there was just 1 lesion but now the man has 6 lesions. Some of the areas have been inflamed, and the man has pruritus, which keeps him up at night. One of his cousins, with whom he swam with regularly, may have such lesions as well. He develops multiple fleshy, red nodules on the trunk. These were treated but healed with mild scarring.

*Which one of the following is most likely?*

- 1- Molluscum contagiosum
- 2- Kaposi's sarcoma
- 3- Human papillomavirus infection
- 4- Herpes zoster infection
- 5- Herpes simplex infection

#### Answer & Comments

Answer: 1- Molluscum contagiosum

Molluscum contagiosum is a viral skin disease characterised by firm, round, translucent, umbilicated papules containing caseous matter and peculiar capsulated bodies.

It is caused by a DNA virus of pox family. This common viral disease has a higher incidence in children, sexually active adults, and those who are immunodeficient. It can appear with crops and can be treated with cryotherapy. It tends to be self limiting.



[ Q: 2297 ] MRCPass - 2011  
September

*What is the mechanism of action of the drug aspirin?*

- 1- Monoclonal antibody
- 2- Cyclooxygenase inhibitor
- 3- Glycoprotein IIb/IIIa inhibitor
- 4- ADP antagonist
- 5- Low molecular weight heparin

#### Answer & Comments

Answer: 2- Cyclooxygenase inhibitor

Aspirin also known as acetylsalicylic acid is a salicylate drug.

Aspirin is classified under nonsteroidal anti-inflammatory drugs (NSAIDs), but differs from them in the mechanism of action. Like other NSAIDs, it inhibits the same enzyme cyclooxygenase (COX), However it affects more the COX-1 variant than the COX-2 variant of the enzyme



[ Q: 2298 ] MRCPass - 2011  
September

A 40-year-old man presented with an initial complaint of dyspnea on exertion that had developed five years prior and had progressed to shortness of breath while walking up one flight of stairs. He has a history of osteoarthritis. He experienced significant inorganic dust exposure while working as a builder. He does not smoke and drinks 2 units of alcohol per day.

Physical examination revealed pulmonary auscultation that was remarkable for a prolonged expiratory phase without wheezes or rhonchi. The remainder of his physical examination was unremarkable. A chest x ray showed hyperinflated lungs with large bullae

Pulmonary function testing at presentation demonstrated :

forced expiratory volume in one second (FEV1) was 2.10 litres (61% of the predicted value)

forced vital capacity (FVC) was 3.60 litres (81% of the predicted value) the FEV1:FVC ratio was 0.58

total lung capacity (TLC) was 6.40 litres (93% of the predicted value)

residual lung volume (RV) was 2.91 litres (123% of the predicted value)

There was minimal response to an inhaled bronchodilator.

*What is the likely diagnosis?*

- 1- Smoking related COPD
- 2- Bronchiectasis
- 3- Alpha 1 antitrypsin deficiency
- 4- Silicosis
- 5- Usual interstitial pneumonitis

#### Answer & Comments

Answer: 3- Alpha 1 antitrypsin deficiency

Alpha 1-antitrypsin deficiency is an autosomal recessive genetic disorder caused by defective production of alpha 1-antitrypsin (A1AT), leading to decreased A1AT activity in the lungs, and deposition of excessive abnormal A1AT protein in liver cells.

Severe A1AT deficiency causes panacinar emphysema or COPD in adult life. The case above demonstrated severe emphysema, and in a non smoker with young age onset the patient is likely to have an inherited cause such as A1AT deficiency.



[ Q: 2299 ] MRCPass - 2011  
September

A 28 year old lady complained of watery diarrhoea for the past few weeks. On investigation of blood tests and stool collections, the following results were obtained:

Na 138 mmol/l

K 2.5 mmol/l

Stool weight chart (fasting - 850 mls / day)

Faecal stool osmolality 295 mosmol/kg

*What is the likely diagnosis?*

- 1- Laxative abuse
- 2- VIPoma
- 3- Giardiasis
- 4- Irritable bowel syndrome
- 5- Crohn's disease

#### Answer & Comments

Answer: 2- VIPoma

VIPoma (Verner Morrison syndrome) is a rare (1 per 10,000,000 per year) endocrine tumor, usually (about 90%) originating in the pancreas, that produces vasoactive intestinal peptide (VIP).

The massive amounts of VIP in turn cause profound and chronic watery diarrhea and resultant dehydration, hypokalemia, achlorhydria, acidosis, vasodilation (flushing and hypotension), hypercalcemia and hyperglycemia.

Clinical diagnosis is based on a history of approximately 10 watery stools per day. Fasting stool volume > 750 to 1000 mL/day is diagnostic. Fecal losses while fasting are at least 20 mL/kg/d but exceed 50 mL/kg/d in most cases.

Fecal osmolality is entirely accounted for by twice the sum of the concentrations of sodium and potassium, indicating the electrolyte loss. Patients may complain about colicky abdominal pain or pain in the upper abdominal area radiating to the back.



[ Q: 2300 ] MRCPass - 2011  
September

A 46 year old woman experienced visual disturbance. The patient reported blurred vision and oscillopsia on downgaze, but did not complain of double vision.

Ophthalmological examination showed decreased near visual acuity. Examination of eye motility showed bilateral weakness of the inferior and lateral rectus muscles.

Downbeat nystagmus on down and lateral gaze was seen clinically.

*What is the likely diagnosis?*

- 1- Grave's eye disease
- 2- Cerebellar tumour
- 3- Arnold Chiari malformation
- 4- Sagittal meningioma
- 5- Horner's syndrome

#### Answer & Comments

Answer: 3- Arnold Chiari malformation

In the Arnold-Chiari malformation a part of the brainstem and the cerebellum are herniated into the cervical vertebral canal.

The cerebellar tonsils are elongated and pushed down through the opening of the foramen magnum, blocking the flow of cerebrospinal fluid. Clinical findings include oscillopsia, impaired smooth pursuit, and OKN, and in many cases downbeat nystagmus. Patients may experience no symptoms or remain asymptomatic until early adulthood, at which point they will often experience severe headaches and neck pain. Fatigue, dizziness, vertigo, neuropathic pain, visual disturbances, difficulty swallowing, ringing in the ears may also occur.



[ Q: 2301 ] MRCPass - 2011  
September

A 35 year old woman with anxiety is hyperventilating acutely after hearing stressful news.

*What would be expected on the arterial blood gas?*

- 1- Low PO<sub>2</sub>
- 2- High PCO<sub>2</sub>

- 3- Normal pH
- 4- Low bicarbonate
- 5- Low H<sup>+</sup> ion

#### Answer & Comments

Answer: 5- Low H<sup>+</sup> ion

In a patient who is hyperventilating, CO<sub>2</sub> is blown off.

Since carbon dioxide is carried as bicarbonate in the blood, the loss of carbon dioxide will drive bicarbonate to combine with hydrogen ions (protons) to form more carbon dioxide. The loss of hydrogen ions results in the blood becoming alkaline, i.e. the blood pH value rises. This is known as a respiratory alkalosis. If the hyperventilation continues, then a drop in bicarbonate levels may occur due to renal clearance after several hours, but the question refers to the acute situation where H<sup>+</sup> is low, but not bicarbonate.



[ Q: 2302 ] MRCPass - 2011  
September

A 25 year old known asthmatic was admitted with an acute exacerbation of her problem. She was given 100mg of IV Hydrocortisone and 2 doses of salbutamol and ipratropium nebulization. Her PEF was measured on admission as 200 (Predicted 550). After 2 doses of salbutamol and Ipratropium nebulization the peak flow did not improve beyond 210 and she was still dyspnoeic.

*What should be the next step in the management?*

- 1- Salbutamol
- 2- Aminophylline
- 3- Na cromoglycate
- 4- IV Magnesium
- 5- Antibiotics

## Answer &amp; Comments

**Answer:** 4- IV Magnesium

A single dose of IV magnesium sulphate has been shown to be safe and effective in acute severe asthma who did not had a good initial response to inhaled bronchodilator therapy in life threatening or near fatal asthma.



[ Q: 2303 ] MRCPass - 2011  
September

A 62 year old man with a history of excessive alcohol use presented with a fall and lost consciousness for several minutes.

He was brought to hospital and was initially alert. However, whilst he was awaiting assessment he complained of a headache and his GCS deteriorated from 15 to 8. He also became acutely confused.

*What is the most likely diagnosis?*

- 1- Subarachnoid haemorrhage
- 2- Subdural haemorrhage
- 3- Diffuse axonal injury
- 4- Epileptic seizure
- 5- Somatization

## Answer &amp; Comments

**Answer:** 2- Subdural haemorrhage

The patient who fell over may have injured his head and the most likely cause of a further sudden deterioration in conscious level with an associated headache is a subdural haemorrhage or haematoma.

This patient needs an urgent CT scan in view of the deterioration.



[ Q: 2304 ] MRCPass - 2011  
September

A 72 year old woman has been referred for management of a blood pressure of 190/100 mmHg. She has a history of bipolar disorder

and peripheral vascular disease. She is currently on aspirin and lithium.

*Which one of the following is the best antihypertensive agent to commence?*

- 1- Valsartan
- 2- Lisinopril
- 3- Amlodipine
- 4- Atenolol
- 5- Doxazosin

## Answer &amp; Comments

**Answer:** 3- Amlodipine

According to the British Hypertension Society guidelines, Patients who are > 55 in age or black should be on either a calcium channel blocker (C) or thiazide diuretic (D).

Amlodipine is a calcium channel blocker hence the best option here. Both thiazides and ACE inhibitors can increase lithium concentration levels.



[ Q: 2305 ] MRCPass - 2011  
September

A 19 year old lady presents with amenorrhoea and is investigated in clinic. She is sexually active and had normal periods up till 1 year ago. Her pregnancy tests across 6 months were negative. The patient has a body mass index of 28. She has normal stature and cardiac, respiratory examination are normal.

Laboratory evaluation reveals the following:

prolactin level of 215 (50-450) ng/mL

LH 22 (0.5-14.5) IU/L

FSH 44 (1-11) IU/L

β-HCG - negative

*Which one of the following is most likely?*

- 1- Premature ovarian failure
- 2- Panhypopituitarism
- 3- Adrenal tumour

4- Polycystic ovary disease

5- Turner's syndrome

#### Answer & Comments

Answer: 1- Premature ovarian failure

Premature ovarian failure is defined as menopause occurring in women prior to the age of 40 years.

Diagnosis requires elevated gonadotrophins - FSH above 40 IU per litre together with raised LH and low oestradiol (less than 100 pmol per litre) on at least two occasions. Ultrasound usually reveals small ovaries, a small uterus and a thin endometrium in premature ovarian failure.



[ Q: 2306 ] MRCPass - 2011  
September

A 62-year-old man with exertional dyspnea, fever and malaise. He had altered bowel habit for several weeks prior to his admission. On examination his temperature was 39.5 C , there was sinus tachycardia of 105 beats/min and respiratory rate was 32/minute. There was a systolic murmur along the apex and diastolic murmur at the right second intercostal area. He was arranged to have urgent trans-thoracic echocardiography which revealed vegetations on both the mitral valves. Blood cultures were taken.

*Which of the following organisms, if cultured, confers the best prognosis?*

- 1- Streptococcus mitis
- 2- Enterococcus
- 3- Streptococcus viridans
- 4- Staphylococcus aureus
- 5- Streptococcus milleri

#### Answer & Comments

Answer: 3- Streptococcus viridans

Cure rates for appropriately managed (including both medical and surgical therapies) native valve endocarditis are as follows:

- For S viridans and S bovis infection, the rate is 98%.
- For enterococci and S aureus infection in individuals who abuse intravenous drugs, the rate is 90%.
- For community-acquired S aureus infection in individuals who do not abuse intravenous drugs, the rate is 60-70%.
- For infection with aerobic gram-negative organisms, the rate is 40-60%.
- For infection with fungal organisms, the rate is lower than 50%.



[ Q: 2307 ] MRCPass - 2011  
September

A 58-year-old non alcoholic patient was admitted to hospital for investigation of hematemesis and melena.

On admission, he looked pale and had a Hb of 8 g/ dl. Urgent endoscopy was organised and this showed grade 2 oesophageal varices.

*What treatment should be undertaken?*

- 1- Intravenous octreotide
- 2- Intravenous terlipressin
- 3- Intravenous fluids
- 4- Banding of varices
- 5- Oral propranolol

#### Answer & Comments

Answer: 4- Banding of varices

This patient has bleeding oesophageal varices and thus banding should be undertaken.

Oesophageal varices are graded according to their size, as follows:

- Grade 1 - Small, straight esophageal varices

- Grade 2 - Enlarged, tortuous esophageal varices occupying less than one third of the lumen
- Grade 3 - Large, coil-shaped esophageal varices occupying more than one third of the lumen



[ Q: 2308 ] MRCPass - 2011  
September

A 41-year-old man is investigated for deterioration in his liver function tests.

It is decided to perform a liver biopsy.

*Which one of the following is a contraindication to liver biopsy?*

- 1- INR of 1.4
- 2- ALT of 250 u/l
- 3- Platelet count of  $110 \times 10^9/l$
- 4- Obesity with BMI of  $35 \text{ kg/m}^2$
- 5- Biliary duct dilatation on the ultrasound

#### Answer & Comments

Answer: 5- Biliary duct dilatation on the ultrasound

The best answer here is biliary duct dilatation, which increases the risk of infection as there might be cholestasis or cholecystitis.

Many would consider obesity, but it is not an absolute contraindication.

A short list of contraindications to liver biopsy are:

Prolonged ( $>1.6$ ) international normalized ratio (INR)

The platelet count should exceed  $60 \times 10^9/l$

There should be no biliary dilatation or major ascites

Bleeding diathesis (eg, hemophilia)

More information can be found in this document:

[http://gut.bmj.com/content/45/suppl\\_4/IV1.f](http://gut.bmj.com/content/45/suppl_4/IV1.f)  
ull



[ Q: 2309 ] MRCPass - 2011  
September

A 16 year old girl presented with a polyarthritis and haematuria. She has noticed a discolouration of her urine and a rash in the legs. On examination, she has a non blanching purpuric rash in both her shins. Blood results show that the urea is 16 mmol/l and creatinine 210 umol/l.

*What is the most likely outcome of the renal involvement?*

- 1- High probability of relapse
- 2- Complete renal recovery
- 3- Persistent hypertension
- 4- Development of nephrotic syndrome
- 5- Long-term corticosteroids required

#### Answer & Comments

Answer: 2- Complete renal recovery

This patient is likely to have Henoch-Schönlein purpura (HSP), which is a self-limited systemic vasculitis.

It is suspected to be triggered by an IgA-mediated response to an antigen. It is characterized by 4 clinical syndromes:

1. Palpable purpura in the absence of thrombocytopenia or coagulopathy. Develops in 100% of patients.
2. Arthritis/arthralgia in 45-75% of patients. Second most common manifestation of HSP.
3. Abdominal pain in 50%, GI bleeding (often occult) in 20-30% of patients.
4. Renal disease in 20-50%.

Full renal recovery is the commonest outcome (90%) in HSP.





[ Q: 2310 ] MRCPass - 2011  
September

A 36 year old female who has been on thyroid replacement therapy has routine thyroid function tests. On examination, she appeared clinically euthyroid with no abnormal findings. Her blood tests showed:

TSH 3.8 mU/L (0.35 - 5.0)

Total T4 18 nmol/L (55 - 144)

free T4 5.2 pmol/L (9 - 24)

Total T3 2.4 nmol/L (0.9 - 2.5)

*Which one of the following is the likely scenario?*

- 1- She is taking thyroid supplements unnecessarily
- 2- She has secondary hypothyroidism
- 3- She has sick euthyroid syndrome
- 4- Her thyroid hormone replacement is adequate
- 5- She should have a short synacthen test

#### Answer & Comments

Answer: 4- Her thyroid hormone replacement is adequate

In hypothyroidism TSH provides a good measure of treatment adequacy and the picture is consistent with adequate replacement despite the low T4 levels.



[ Q: 2311 ] MRCPass - 2011  
September

A 30 year old man presents with persistent diarrhoea and fevers.

The diarrhoea did not improve despite fluids and ciprofloxacin treatment. He has known HIV infection and his most recent CD4 count was 45.

*Which one of the following is the likely pathogen?*

- 1- Salmonella

2- Mycobacterium avium intracellulare

3- Shigella

4- Campylobacter

5- Rotavirus

#### Answer & Comments

Answer: 2- Mycobacterium avium intracellulare

MAC rarely causes disease in individuals with a normal immune system.

In patients with AIDS (CD4 count < 50), However, it is one of the most common serious opportunistic infections. Patients most commonly report persistent fever, night sweats, fatigue, weight loss, and anorexia. Abdominal pain or chronic diarrhea may result from involvement of retroperitoneal lymph nodes or gut mucosa, respectively.



[ Q: 2312 ] MRCPass - 2011  
September

A 42-year-old man has recently started treatment for pulmonary tuberculosis. He has a history of diabetes and osteoarthritis. Prior to starting treatment, *which one of the following tests should be done?*

- 1- Full blood count
- 2- Urea and electrolytes
- 3- ESR
- 4- Coagulation screen
- 5- Liver function test

#### Answer & Comments

Answer: 5- Liver function test

The standard treatment for tuberculosis is a 6-month, four-drug initial regimen (6 months of isoniazid and rifampicin supplemented in the first 2 months with pyrazinamide and ethambutol).

Anti-tuberculosis chemotherapy is associated with abnormalities in liver function tests in 10-25% of patients. Several anti-tuberculosis agents have been implicated as being hepatotoxic. Isoniazid (particularly in association with rifampicin) and pyrazinamide cause hepatic dysfunction more frequently than ethambutol and streptomycin.



[ Q: 2313 ] MRCPass - 2011  
September

A 38-year-old man went for a holiday in Belize. He presented with a non-healing ulcer on the nasal area after 6 weeks. The lesion started as an itchy red papule which slowly enlarged into an ulcerated plaque. He remembered being bitten by sandflies during his stay in Belize. There were no systemic symptoms. The ulcer failed to heal despite several courses of systemic antibiotics. There was no relevant past medical or drug history of note.

On examination, he had a was noted to have a 2 cm x 1.8 cm crusted, ulcerated plaque on the upper, inner aspect of the left nasal area. There were no regional or generalized lymphadenopathy and no muco-cutaneous changes.

*What is the likely diagnosis?*

- 1- Behcet's disease
- 2- Cutaneous leishmaniasis
- 3- Syphilis
- 4- basal cell carcinoma
- 5- Squamous cell carcinoma

#### Answer & Comments

Answer: 2- Cutaneous leishmaniasis

Cutaneous leishmaniasis is spread by female sandflies of the genus *Phlebotomus*.

The causative agents include *L. (V.) braziliensis*, *L. (L.) mexicana*, *L. (V.) panamensis*, and related species. Most infections follow a bite from an infected

sandfly and remain subclinical. However, in some cases, after an incubation period of 1-12 weeks, a papule develops that enlarges and ulcerates. The typical lesions are crusty, painless ulcers on exposed skin.

Ulcerative lesions are usually shallow and circular with well-defined, raised borders and a bed of granulation tissue. Local lymphadenopathy only occurs in the presence of bacterial superinfection. Cutaneous leishmaniasis is found predominantly in South America, Central Africa, around the Mediterranean Sea and India



[ Q: 2314 ] MRCPass - 2011  
September

A 61 year old lady is being assessed for treatment of hypertension. She has a high blood pressure despite being on bendroflumethiazide. She has recently discontinued medications due to ankle oedema, gum bleeding and generalised lethargy.

*What medication should she be given?*

- 1- Atenolol
- 2- Perindopril
- 3- Amlodipine
- 4- Verapamil
- 5- Frusemide

#### Answer & Comments

Answer: 2- Perindopril

Beta blockers may worsen lethargy and calcium channel blockers can cause ankle oedema and gum bleeding.

A thiazide diuretic has already been started, hence frusemide is not appropriate, hence an ACE inhibitor such as perindopril is the best option.



[ Q: 2315 ] MRCPass - 2011  
September

*Which organ listed below is with direct contact with left kidney?*

- 1- Liver
- 2- Duodenum
- 3- Small intestine
- 4- Pancreas
- 5- Colon

#### Answer & Comments

Answer: 4- Pancreas

The left kidney is anatomically next to the spleen and pancreas.



[ Q: 2316 ] MRCPass - 2011  
September

A type 2 diabetic with poor glycaemic control on metformin and rosiglitazone was then started on sitagliptin.

*What is the mechanism of action of gliptins?*

- 1- Binds to PPAR gamma
- 2- Sulphonylurea secretagogue
- 3- Alpha glucosidase inhibitor
- 4- Glucagon like peptide
- 5- Dipeptidyl peptidase 4 inhibitor

#### Answer & Comments

Answer: 5- Dipeptidyl peptidase 4 inhibitor

Dipeptidyl peptidase-4 inhibitors (DPP-4s), also commonly called gliptins, are a relatively new class of drugs for the treatment of type 2 diabetes.

Examples are vildagliptin and sitagliptin. These agents work in a unique way to improve insulin secretion from the Beta-cells of the pancreas in response to an increase in blood sugar and simultaneously decrease glucagon

output from the a-cells of the pancreas, which results in decreased hepatic glucose output.

Gliptins are recommended as an option in type 2 diabetes for patients with inadequate glycaemic control despite being on metformin, sulphonylureas and glitazones.



[ Q: 2317 ] MRCPass - 2011  
September

A 41 year old man is admitted with fevers and a cough productive of green sputum. His friends had similar presenting symptoms. On investigation the blood results showed macrocytosis and chest x ray shows a right upper lobe cavitating lesion.

*What is the most likely cause?*

- 1- Haemophilus influenzae
- 2- Klebsiella
- 3- Legionella
- 4- Streptococcus pneumoniae
- 5- Mycoplasma

#### Answer & Comments

Answer: 2- Klebsiella

Klebsiella infection most common in men over 40 years of age and is most frequently found in alcoholics.

Other predisposing factors are heart or lung disease, diabetes and malignancy. There is often sudden with severe systemic upset (high fever, rigors) and pleuritic pain. The sputum is purulent, gelatinous or blood-stained (haemoptysis occurs more often than in most bacterial pneumonias) Consolidation is usually seen in the upper lobes and may be extensive - swelling of the infected lobe may result in bulging of the fissures on the lateral chest X-ray.



[ Q: 2318 ] MRCPass - 2011  
September

A 17 year old female is evaluated in the pediatric endocrinology clinic for primary amenorrhoea.

*Which one of these features is consistent with testicular feminisation or androgen insensitivity syndrome?*

- 1- Male phenotype with lack of hair
- 2- Male phenotype with inguinal testis
- 3- Male phenotype with breast development
- 4- Female phenotype with clitoromegaly and undescended testis
- 5- Female phenotype with external male genitals

#### Answer & Comments

**Answer:** 4- Female phenotype with clitoromegaly and undescended testis

Androgen insensitivity syndrome (AIS), formerly known as testicular feminization, is an X-linked recessive condition.

A person with complete androgen insensitivity syndrome (CAIS) has a female external appearance despite a 46XY karyotype and undescended testes. This is due to the lack of sensitivity to androgen (testosterone) leading to a failure of male physical development.

Many of these patients have a female phenotype. Some patients are first seen in the teenage years for evaluation of primary amenorrhea, but most are identified in the new born period by the presence of inguinal masses, which later are identified as testes during surgery. The patients also have a male level of testosterone and may have clitoromegaly or a micropenis.



[ Q: 2319 ] MRCPass - 2011  
September

An 18 year old man was referred with a 6-w

week history of a progressive malaise. He had been commenced 5 days of antibiotic treatment by his GP no improvement was noted. On examination he had several palpable cervical and axillary lymph nodes. He did relate a history of exposure to cats at home and had scratch mark on his chest.

*What is the likely organism?*

- 1- Bartonella hensalae
- 2- Pasteurella multocoda
- 3- Pseudomonas
- 4- Staph aureus
- 5- Candida

#### Answer & Comments

**Answer:** 1- Bartonella hensalae

The genus Bartonella (formerly Rochalimaea) is a member of the rickettsial order of bacteria, and it is found worldwide.

The most likely mode of bacterial transmission is an infected cat, hence the term 'Cat Scratch' disease.

Cat-to-cat transmission is believed to be attributable to fleas.



[ Q: 2320 ] MRCPass - 2011  
September

A 36-year-old man is admitted with left-sided pleuritic chest pains. These pains have been occurring for the past 2 weeks. Prior to the onset of the pains, he had been experiencing flu-like symptoms.

*What is the ECG most likely to show ?*

- 1- S1, Q3, T3
- 2- Atrial fibrillation
- 3- Widespread ST elevation
- 4- ST segment depression in the anterior leads
- 5- Tented T waves

## Answer &amp; Comments

**Answer:** 3- Widespread ST elevation

The diagnosis is likely to be pericarditis (possibly viral aetiology) and classical ECG changes of saddle shaped ST elevation are expected



[ Q: 2321 ] MRCPass - 2011  
September

**What is the mode of inheritance of vitamin D resistant rickets?**

- 1- Autosomal recessive
- 2- Autosomal dominant
- 3- X linked Recessive
- 4- X linked dominant
- 5- Sporadic

## Answer &amp; Comments

**Answer:** 4- X linked dominant

X-linked hypophosphatemic or Vitamin D resistant Rickets is an X-linked dominant disorder characterized by growth retardation, rachitic and osteomalacic bone disease, hypophosphatemia, and renal defects in phosphate reabsorption and vitamin D metabolism



[ Q: 2322 ] MRCPass - 2011  
September

A 34-year-old Caucasian woman admitted has a history of widespread, pruritic, erythematous skin rash, joint pains and renal disease.

She recently had a baby with congenital heart block. Laboratory investigations revealed mild leucopenia (white cell count  $3.25 \times 10^9/\text{ml}$ ) and thrombocytopenia (platelets  $140 \times 10^9/\text{ml}$ ). Erythrocyte sedimentation rate was increased (65 mm/h).

**Which antibody is likely to be positive?**

- 1- Anti Jo 1

2- Anti double stranded DNA

3- Anti Ro

4- Anti centromere

5- ANCA

## Answer &amp; Comments

**Answer:** 3- Anti Ro

The anti Ro antibody is associated with Sjogren's syndrome, SLE and neonatal lupus.

Neonatal lupus erythematosus (NLE) is a rare disorder caused by the transplacental passage of maternal autoantibodies. Only 1% of infants with positive maternal autoantibodies develop neonatal lupus erythematosus. The most common clinical manifestations are cardiac (congenital heart block), dermatologic (urticaria and skin desquamation), and hepatic (abnormal LFTs). The mother produces immunoglobulin G (IgG) autoantibodies against Ro (SSA), La (SSB), and/or U1-ribonucleoprotein (U1-RNP), and they are passively transported across the placenta. These autoantibodies can be found alone or in combination; However, anti-Ro is present in almost 95% of patients.



[ Q: 2323 ] MRCPass - 2011  
September

A 55 year old man presented with severe retrosternal chest pain. His ECG shows ST depression in leads V1 to V4. He has been given Fondaparinux.

**What is the drug's mechanism of action?**

- 1- Tissue plasminogen activator
- 2- GIIIBIIIA inhibitor
- 3- Factor X a inhibitor
- 4- Low molecular weight heparin
- 5- Antithrombin III inhibitor

## Answer &amp; Comments

**Answer:** 3- Factor X a inhibitor

Fondaparinux is a synthetic pentasaccharide Factor Xa inhibitor.

It is used for the prevention of deep vein thrombosis, pulmonary embolism and for management of acute coronary syndrome. One potential advantage of fondaparinux over LMWH or unfractionated heparin is that the risk for heparin-induced thrombocytopenia (HIT) is substantially lower.



[ Q: 2324 ] MRCPass - 2011  
September

An 18 year man whose brother had hypertrophic cardiomyopathy was referred for a cardiological assessment.

His echocardiogram confirmed the above condition.

*Which one of following echocardiographic features is an important risk factor for sudden cardiac death?*

- 1- Gradient of 30 mmHg across left ventricular outflow tract
- 2- Septal wall thickness of > 3 cm
- 3- An enlarged left atrium
- 4- Systolic anterior motion of mitral valve
- 5- The presence of mitral regurgitation

#### Answer & Comments

Answer: 2- Septal wall thickness of > 3 cm

Patients die of hypertrophic obstructive cardiomyopathy by obstructing left ventricular outflow tract (LVOT), usually during exercise.

The greater thickness of septum, more likely there is risk of cardiac arrhythmias (> 3 cm is significant).



[ Q: 2325 ] MRCPass - 2011  
September

*Which one of following cells in lung parenchyma produces surfactant?*

- 1- Alveolar macrophage

- 2- Endothelial cell
- 3- Goblet Cell
- 4- Type I pneumocyte
- 5- Type II pneumocyte

#### Answer & Comments

Answer: 5- Type II pneumocyte

Surfactant is produced by type II pneumocytes.

Type II pneumocytes also called great alveolar cells or septal cells are granular and roughly cuboidal in shape. Type II pneumocytes are typically found at the alveolar-septal junction.



[ Q: 2326 ] MRCPass - 2011  
September

A 25 year old man has had behavioural disturbance recently. His parents mentioned that his brother has been investigated for liver problems recently. On examination, he has a MMSE score of 28/30. He has a mask like face and was noticed to have hypersalivation. When the investigations are complete, *which drug is most likely to be used for treatment?*

- 1- Desferrioxamine
- 2- Co careldopa
- 3- Penicillamine
- 4- Interferon alpha
- 5- Chlorpromazine

#### Answer & Comments

Answer: 3- Penicillamine

The likely diagnosis is Wilson's disease.

Most patients who present with neuropsychiatric manifestations have cirrhosis. The most common presenting neurologic feature is asymmetric tremor, occurring in approximately half of individuals with Wilson disease. Frequent early symptoms include difficulty speaking, excessive



salivation, ataxia, masklike facies, clumsiness with the hands, and personality changes. The disease is autosomal recessive.

Penicillamine is used as a copper chelator.



[ Q: 2327 ] MRCPass - 2011  
September

A 22 year old man is tall compared to his peers. On examination, he was found to have aortic incompetence and mitral valve prolapse. He also had pectus excavatum, arachnodactyly and arm span greater than height. Slit lamp examination revealed had upward dislocation of the lens in the eye.

*The gene defect is:*

- 1- Actin
- 2- Myosin
- 3- Fibrillin
- 4- Retinoblastoma
- 5- Elastin

#### Answer & Comments

Answer: 3- Fibrillin

The fibrillin gene defect is the basis of Marfan's syndrome.

It is an autosomal dominant disorder characterised by arachnodactyly, upward lens dislocation, tall habitus and flat feet. Aortic aneurysms and aortic regurgitation are also associated.



[ Q: 2328 ] MRCPass - 2011  
September

A 20-year-old female college student presents with increased polydipsia and polyuria since childhood. She has always feels thirsty and has a frequency of micturition of 20 to 25 times in a 24-hour period. She mentions that she has had the symptoms for 2 months. Upon investigation the following results were found.  
sodium 122 mmol/l

potassium 4.5 mmol/l

urea 4 mmol/l

creatinine 78 µmol/l

Glucose: 5.5 mmol/l

Plasma Osmolality 270 (280-300) mosm/kgwater

Urine Osmolality 90 (50-1200) mosm/kg

A water deprivation test was conducted and the urine osmolality increased to 300 mosm/kg and the serum osmolality increased to 290 mosm/kg after 6 hours.

*What is the diagnosis?*

- 1- Addison's disease Diabetes mellitus
- 2- Diabetes mellitus
- 3- Psychogenic polydipsia
- 4- Diabetes insipidus
- 5- SIADH

#### Answer & Comments

Answer: 3- Psychogenic polydipsia

Primary polydipsia or psychogenic polydipsia is usually associated with a patient's increasing fluid intake due to the sensation of having a dry mouth.

The test of choice to distinguish primary polydipsia from diabetes insipidus is by fluid restriction (water deprivation test).

In primary polydipsia, the urine osmolality should increase and stabilize at above 280 Osm/kg. Stabilization in this test means, more specifically, when the hourly increase in osmolality is less than 30 Osm/kg per hour for at least 3 hours. A stabilization at an osmolality of less than 280 Osm/kg indicates diabetes insipidus.



[ Q: 2329 ] MRCPass - 2011  
September

A 60 year old woman has recently been diagnosed with small cell carcinoma of the

lung. She has a 45 pack year smoking history. She comes to the urgent care clinic today complaining of a cough and was found to be confused. The blood tests show :

sodium 119 mmol/l,

potassium 4.2 mmol/l

urea 6 mmol/l

creatinine 80 µmol/l

Plasma Osmolality 260 (280-300) mmol/kg water

Urine Osmolality 380 mmol/kg

*What is the diagnosis?*

- 1- Addison's disease
- 2- Diabetes mellitus
- 3- Psychogenic polydipsia
- 4- Diabetes insipidus
- 5- SIADH

#### Answer & Comments

Answer: 5- SIADH

The syndrome of inappropriate antidiuretic hormone hypersecretion (SIADH) is characterized by excessive release of antidiuretic hormone (ADH or vasopressin) from the posterior pituitary gland or another source.

The result is hyponatremia . It is associated with small-cell carcinoma of the lung, pneumonia, brain tumors, head trauma, stroke, meningitis, and encephalitis. In general, increased ADH causes water retention and extracellular fluid volume expansion without edema or hypertension, owing to natriuresis (the excretion of sodium by the kidneys). The water retention and sodium loss both cause hyponatremia, which is a key feature in SIADH. Hyponatremia and concentrated urine (UOsm >300 mOsm) are seen, as well as no signs of edema or dehydration. Severe hyponatraemia can lead to cerebral oedema and hence .



[ Q: 2330 ] MRCPass - 2011  
September

*Which one of the following is a bad prognostic marker in acute lymphoblastic leukaemia?*

- 1- Pre-B phenotype
- 2- Age of < 20 years
- 3- Initial white cell count of  $18 \times 10^9/l$
- 4- Female sex
- 5- BCR-Abl gene

#### Answer & Comments

Answer: 5- BCR-Abl gene

Acute lymphoblastic leukaemia (ALL) is most common in childhood with a peak incidence at 4-5 years of age, and another peak in old age.

Some prognostic factors are:

Sex: females tend to fare better than males.

Age at diagnosis: children between 1-10 years of age are most likely to develop ALL and to be cured of it.

Cytogenetics: Philadelphia translocation, t(9;22) is a bad prognostic factor. (Philadelphia translocation, t(9;22) - good prognosis in CML, poor prognosis in AML + ALL) The exact chromosomal defect in Philadelphia chromosome is a translocation. Parts of two chromosomes, 9 and 22, swap places. The result is that a fusion gene is created by juxtapositioning the Abl1 gene on chromosome 9 (region q34) to a part of the BCR ("breakpoint cluster region") gene on chromosome 22 (region q11). The result of the translocation is the oncogenic BCR-ABL gene fusion. Because the Abl gene expresses a membrane-associated protein, a tyrosine kinase, the BCR-Abl transcript is also translated into a tyrosine kinase, adding a phosphate group to tyrosine. Although the BCR region also expresses serine/threonine kinases, the tyrosine kinase function is very relevant for drug therapy. Tyrosine kinase

inhibitors (such as imatinib and sunitinib) are important drugs against a variety of cancers including in CML, and sometimes in Ph-positive acute lymphoblastic leukemia (Ph+ALL)



[ Q: 2331 ] MRCPass - 2011  
September

A 73-year-old male presents to the emergency department with sudden-onset, diffuse abdominal pain that began 18 hours ago. He has not been vomiting, but he has had several episodes of diarrhoea, the last of which was bloody. Ischaemic colitis was diagnosed following a surgical review.

*Where is the most common site for the condition?*

- 1- Hepatic flexure
- 2- Splenic flexure
- 3- Caecum
- 4- Sigmoid
- 5- Rectum

#### Answer & Comments

Answer: 2- Splenic flexure

The colon receives blood from both the superior and inferior mesenteric arteries.

The blood supply from these two major arteries overlap, with abundant collateral circulation. However, there are weak points, or "watershed" areas, at the borders of the territory supplied by each of these arteries, such as the splenic flexure and the transverse portion of the colon. These watershed areas are most vulnerable to ischemia, thus leading to ischaemic colitis.



[ Q: 2332 ] MRCPass - 2011  
September

A 27-year-old man presented with bi-temporal hemianopia. He mentioned that his

shoe sizes were above that of his friends since childhood and he often had sweaty episodes.

*Which one of the following tests is likely to confirm the diagnosis of acromegaly?*

- 1- Random growth hormone
- 2- IGF-1
- 3- Glucose tolerance test with growth hormone suppression
- 4- Synacthen test
- 5- MRI pituitary

#### Answer & Comments

Answer: 3- Glucose tolerance test with growth hormone suppression

In Acromegaly, there is excess Growth hormone (GH) which is difficult to suppress.

Because GH secretion is inhibited by glucose, measurement of glucose non-suppressibility is useful. In the glucose tolerance test, baseline GH levels are obtained prior to ingestion of 100 g of oral glucose, and additional GH measurements are made at 30, 60, 90, and 120 minutes following the oral glucose load. Patients with active acromegaly are unable to suppress GH concentration below 2 ng/mL.

Random GH measurements are often not diagnostic because of the episodic secretion of GH, but IGF-I has a long half-life, and is useful as a screen for Acromegaly. MRI may reveal a pituitary tumour but it would not be specific for Acromegaly.



[ Q: 2333 ] MRCPass - 2011  
September

A 53-year-old woman presented to the emergency department with complaints of intermittent fatigue, nausea and vomiting for several months. She complains of having a constant dry mouth. She had a past medical history of hypothyroidism and pernicious anaemia. She had a 20 pack-year smoking history and alcohol intake consisted of a

maximum of 4 units a day. On examination, she was jaundiced and had palpable hepatomegaly. She was noted to have excoriation marks on the skin.

Blood results are: Hb 12.5 g/dl, WCC  $7 \times 10^9/l$ , platelets  $235 \times 10^9/l$ , sodium 136 mmol/l, potassium 4.5 mmol/l, urea 6 mmol/l, creatinine 110  $\mu\text{mol/l}$ , ALT 88 (5-35) U/l, AST 55 (1-31) U/l, ALP 520 (20-120) U/l, GGT 85 (4-35) U/l, Bilirubin 125 (1-22)  $\mu\text{mol/l}$ , Albumin 38 (37-49) g/l.

*What is the likely diagnosis?*

- 1- Hepatitis B infection
- 2- Ulcerative colitis
- 3- Crohn's disease
- 4- Primary biliary cirrhosis
- 5- Gilbert's syndrome

#### Answer & Comments

Answer: 4- Primary biliary cirrhosis

The patient has a cholestatic picture (high alkaline phosphatase and bilirubin) in the liver function tests, and hence out of all the options, primary biliary cirrhosis is most likely.

There is an association with autoimmune diseases such as scleroderma, autoimmune thyroiditis. Fatigue is the first reported symptom, pruritus is also a common symptom.

Examination findings usually include hepatomegaly and xanthelasmata.



[ Q: 2334 ] MRCPass - 2011  
September

*Which one of the following is the most common underlying physiological mechanism causing prolongation of the QT segment?*

- 1- Opening of calcium channels
- 2- Opening of potassium channels
- 3- Opening of sodium channels

- 4- Inhibition of sodium channels
- 5- Inhibition of potassium channels

#### Answer & Comments

Answer: 5- Inhibition of potassium channels

Most candidates answered either inhibition of sodium or potassium channels.

Although it can be caused by inhibition of sodium, potassium or calcium channels, around 90% of inherited long QT syndrome are due to defects in potassium channels



[ Q: 2335 ] MRCPass - 2011  
September

A 65 year old man had recently retired and over the last month has developed symptoms of trouble concentrating, early morning waking and poor interest in daily activities. He lost his retirement pension in the recession. He reported current suicidal ideation without a specific plan but these thoughts were not recurrent. He hated his life and cried constantly. He reported that he felt hopeless and unaware of future opportunities or choices in life. He felt "stuck" and "lost." His wife said that he was often withdrawn.

*What is the diagnosis?*

- 1- Mania
- 2- Depression
- 3- Schizophrenia
- 4- Conversion disorder
- 5- Anxiety disorder

#### Answer & Comments

Answer: 2- Depression

Depression is a state of low mood where patients may feel sad, anxious, hopeless and worthless.

They may lose interest in activities that once were pleasurable, experience loss of appetite,

or problems concentrating; and may contemplate or attempt suicide. Insomnia, excessive sleeping, fatigue, loss of energy are additional symptoms which may be present.



[ Q: 2336 ] MRCPass - 2011  
September

A 36 year old man presented with a generalised seizure. On examination, he was found to have adenoma sebaceum on the face, two hypopigmented areas and subungual fibroma. He had a urine dipstick showing blood ++ and was organised to have an ultrasound of the kidneys which showed cystic changes.

*What is the likely diagnosis?*

- 1- Von Hippel Lindau
- 2- Neurofibromatosis
- 3- Vitiligo
- 4- Acromegaly
- 5- Tuberous sclerosis

#### Answer & Comments

Answer: 5- Tuberous sclerosis

The diagnosis is tuberous sclerosis.

It is an autosomal dominant condition. Features are epilepsy (cortical tubers in the brain), adenoma sebaceum on the skin, subungual fibroma of the nails, oval hypopigmented macules - ash leaf macules - best seen with Wood's (UV) light, retina phakoma, renal angiomyolipoma (causing cystic renal lesions) and cardiac rhabdomyomas.



[ Q: 2337 ] MRCPass - 2011  
September

A 25 year old woman complained of voices which told her to cut rhis arms, and that she had heard these voices over the last few days. She was unemployed and lived with two

friends. Her friends mentioned that she often takes drugs.

*Which one of the following is the most likely cause of her symptoms?*

- 1- Alcohol
- 2- Amphetamines
- 3- Diazepam
- 4- Gamma-hydroxybutyrate
- 5- Morphine

#### Answer & Comments

Answer: 2- Amphetamines

The patient is likely to be having delusions and amphetamines are the most likely cause.

It tends to occur after large doses and chronic use.



[ Q: 2338 ] MRCPass - 2011  
September

A 75 year old man with sever COPD was admitted to hospital with acute shortness of breath. He was initially alert and the admitting doctor asked him about escalation of treatment if he should become unwell. He understood the question and could repeat the information back to the doctor. He agreed to have antibiotics, nebulisers and non invasive ventilation but refused to have intubation and ventilation.

An hour later, whilst on non invasive ventilation, he developed type II respiratory failure, worsened and became acutely confused. His GCS dropped to 6 / 15. His family members became anxious and asked what was being done for him.

*What should be done?*

- 1- Continue antibiotics and nebulisers only
- 2- Intubate the patient in his best interest
- 3- Obtain consent from next of kin to intubate patient

- 4- Increase settings of non invasive ventilation  
5- Stop all treatment completely

#### Answer & Comments

Answer: 1- Continue antibiotics and nebulisers only

The patient has worsened on non invasive ventilation (NIV) and is too unwell to tolerate NIV due to the low GCS.

The patient had expressed clear wishes not for intubation when he had capacity, so it is inappropriate to obtain consent from next of kin to go against his wishes.

The best option is to manage conservatively, hence the patient can have medications but to explain to the family that he is extremely unwell and may not survive. Stopping all treatment abruptly may distress the family at this point.



[ Q: 2339 ] MRCPass - 2011  
September

A 31-year-old man who has returned from a holiday in Egypt presents with diarrhoea. He had been on a cruise at the Nile river. For the past two days he has been passing frequent bloody diarrhoea associated with crampy abdominal pain. Abdominal examination demonstrates diffuse lower abdominal tenderness but there is no guarding or rigidity. His temperature is 37.8°C.

*What is the most likely causative organism?*

- 1- Giardiasis  
2- Enterotoxigenic Escherichia coli  
3- Staphylococcus aureus  
4- Shigella  
5- Salmonella

#### Answer & Comments

Answer: 4- Shigella

All are common causes of traveller's diarrhoea.

However, North Africa and the Middle East (in particular Egypt) were also commonly reported regions of travel for Shigella spp infections.

Some of the infectious causes of bloody diarrhoea are:

- Salmonella
- Shigella
- Campylobacter jejuni
- Yersinia enterocolitica
- E. coli
- Entamoeba histolytica



[ Q: 2340 ] MRCPass - 2011  
September

A 77-year-old male presented with a 4-year history of mild cognitive decline. He has a 10-year history of hypertension and type 2 diabetes. According to his family, he had become more forgetful, yet he was able to carry out simple tasks independently. His short-term memory was impaired, as was his ability to concentrate. His gait was slow and he was unsteady. He leaned backward when he walked and fell often, especially when trying to turn to the left or right. He experienced urinary frequency, nocturia, and urinary incontinence at least once a day.

*What is the most likely diagnosis?*

- 1- Alzheimer's disease  
2- Transient ischaemic attack  
3- Lewy body dementia  
4- Pick's disease  
5- Normal pressure hydrocephalus

#### Answer & Comments

Answer: 5- Normal pressure hydrocephalus



Normal pressure hydrocephalus (NPH) is a clinical symptom complex characterized by abnormal gait, urinary incontinence, and dementia.

The CT scan often shows evidence of hydrocephalus (distended ventricles), but the CSF pressure is normal on lumbar puncture. The treatment is to remove CSF by lumbar puncture (normally 50 mls).



[ Q: 2341 ] MRCPass - 2011  
September

A 38 year old man was investigated for infertility. He has a history of hypertension, diabetes and Crohn's disease. He takes several medications.

*Which one of the following drugs is most likely to cause this?*

- 1- Mesalazine
- 2- Sulfasalazine
- 3- Aspirin
- 4- Azathioprine
- 5- Cyclosporin

#### Answer & Comments

Answer: 2- Sulfasalazine

Sulfasalazine, anabolic steroids, cyclophosphamide, chlorambucil, busulfan and cisplatin are drugs which cause azoospermia.



[ Q: 2342 ] MRCPass - 2011  
September

A 22-year-old woman presents with a fall and was found at home with a low conscious level.

She has no significant medical history. A friend who came with her mentioned that she was an intravenous drug user and drank 8 - 10 pints of lager a day. On admission, she had a blood pressure of 95/60 mmHg and temperature of 34 C. She was very weak and

unable to get out of bed. Cardiovascular, respiratory and abdominal examination were unremarkable. Urine dipstick shows protein ++, blood +++, white cells +.

*What test should be done?*

- 1- Magnesium
- 2- Creatine kinase
- 3- International normalised ratio
- 4- Troponin
- 5- Brain natriuretic peptide

#### Answer & Comments

Answer: 2- Creatine kinase

This patient is likely to have been on the floor due to weakness and may have rhabdomyolysis.

The urine dipstick may demonstrate blood, although the true test is of myoglobin levels. A significantly elevated creatine kinase enzyme would be a reasonable indicator of rhabdomyolysis, and the patient should be kept well hydrated.

Monitoring of renal function and urine output would be important.



[ Q: 2343 ] MRCPass - 2011  
September

A 43 year old man complained of abdominal pain, weight loss and diarrhoea for the past few months. On examination, he had a soft abdomen with inguinal lymphadenopathy. A colonoscopy was performed and the small intestinal biopsy showed PAS stained macrophages.

*What is the probable diagnosis?*

- 1- Intestinal lymphoma
- 2- Whipple's disease
- 3- Hepatitis
- 4- Celiac disease
- 5- Tropical Sprue

## Answer &amp; Comments

**Answer:** 2- Whipple's disease

Whipple's disease is caused by the organism *Tropheryma whipplei*.

It primarily causes malabsorption but may affect any part of the body including the heart, lungs, brain, joints, skin, and the eyes. The clinical features of Whipple's disease include: malabsorption, weight loss, abdominal pain, lymphadenopathy, migratory polyarthritides, sacroiliitis, increased skin pigmentation, pyrexia, neurological abnormalities.

The disease is regarded as extremely rare, with an incidence of one case per million people. The patients are predominantly male and in their age 40s. *T. whipplei* appears to be an environmental organism that is commonly present in the gastrointestinal tract but remains asymptomatic. Patients who have Whipple's disease are thought to have an immunological defect.

The small intestinal biopsy in Whipple's disease reveals:

minimal villous atrophy

PAS positive staining foamy macrophages with intracellular bacilli (*Tropheryma whipplei*)



[ Q: 2344 ] MRCPass - 2011  
September

A 20-year-old man presents with lethargy, pyrexia and headaches. These symptoms have been present for the past 8 days. He had not been unwell before and there is no recent history of travel. Clinical examination reveals a temperature of 37.9°C, marked cervical lymphadenopathy and mild hepatomegaly. Throat examination reveals two small erythematous areas. A full blood count result shows:

Hb 13.1 g/dl

Platelets  $225 \times 10^9/l$

WCC  $17.1 \times 10^9/l$

Neut  $5.2 \times 10^9/l$

Lymp  $11.2 \times 10^9/l$

Blood Film Atypical lymphocytes seen

**What is the most likely diagnosis?**

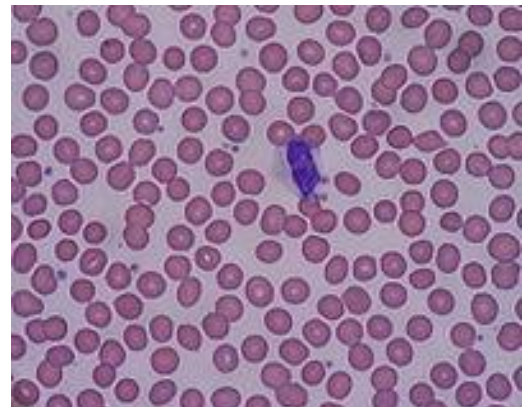
- 1- Acute lymphoblastic leukaemia
- 2- Hashimoto's thyroiditis
- 3- Infectious mononucleosis
- 4- HIV seroconversion
- 5- Septicaemia secondary to streptococcal throat infection

## Answer &amp; Comments

**Answer:** 3- Infectious mononucleosis

The history of previously being well, acute deterioration with lymphadenopathy, throat involvement and atypical lymphocytes on blood film are all consistent with Epstein Barr virus infection (glandular fever or infectious mononucleosis).

Atypical lymphocytes are commonly associated with EBV, CMV and toxoplasma infection.



Reactive lymphocytes are lymphocytes that become large as a result of antigen stimulation.



[ Q: 2345 ] MRCPass - 2011  
September

A 51-year-old male presented with sudden worsening of breathlessness after a severe episode of pneumonia was thought to have

developed acute respiratory distress syndrome (ARDS).

*Which of the following features would support a diagnosis of ARDS?*

- 1- High pulmonary capillary wedge pressure
- 2- High protein pulmonary oedema
- 3- Hypercapnea
- 4- Increased lung compliance
- 5- Normal chest x- ray

#### Answer & Comments

Answer: 2- High protein pulmonary oedema

Answer: B): high protein pulmonary oedema

ARDS is characterised by hypoxaemia, reduced lung compliance (stiff lungs) and pulmonary infiltrates on the chest x- ray.

There is also no cardiogenic cause for pulmonary oedema (the Pulmonary Capillary Wedge pressure has to be normal or less than 18mmHg to confirm this).

Histologically, in ARDS there is damage to the capillary and endothelial cell linings, resulting in leakage of proteins into the interstitial and alveolar spaces at normal pulmonary capillary hydrostatic pressures - hence causing pulmonary oedema with high protein. In cardiac failure the protein levels of pulmonary oedema fluid are low .



[ Q: 2346 ] MRCPass - 2011  
September

A 65-year-old female is brought to A&E by her family, who are concerned about her increasing lethargy and confusion over the past 3 days. There is a history of diarrhea in the preceding few days. On examination she is found to be pyrexial at 38°C. Breath sounds are clear and there is mild tenderness in the lower abdomen.

Blood tests results show :

Hb 8.6 g/dl

WCC  $12 \times 10^9/l$

Platelets  $65 \times 10^9/l$

sodium 138 mmol/l

potassium 4.7 mmol/l

Urea 22.1 mmol/l

Creatinine 366  $\mu\text{mol/l}$

Blood film : fragmented red cells and helmet shaped red cells

*What is the likely causative organism?*

- 1- Staphylococcus aureus
- 2- Neisseria Meningitidis
- 3- Legionella
- 4- Leptospira
- 5- E coli 0157

#### Answer & Comments

Answer: 5- E coli 0157

The patient has haemolytic uraemic syndrome.

It is characterized by the triad of microangiopathic hemolytic anemia, thrombocytopenia, and acute renal failure. Diarrhea (E coli 0157) and upper respiratory infection are the most common precipitating factors. The hallmark of HUS in the peripheral smear is the presence of schistocytes (fragmented, deformed red cell fragments) and helmet-shaped RBCs.



[ Q: 2347 ] MRCPass - 2011  
September

A 61-year-old man is admitted with chest pain to the Emergency Department. He has a past medical history of type 2 diabetes, hypertension and high cholesterol. His regular medications includes simvastatin, bisoprolol, glibenclamide and metformin. An ECG shows ST elevation in the anterior leads and he is referred for primary angioplasty. Following the procedure, he was transferred to the

Coronary Care Unit (CCU). He has a blood glucose measurement of 15 mmol/l.

*Which drug regime should be commenced?*

- 1- Continue metformin and glibenclamide at same dose
- 2- Stop metformin and increase dose of glibenclamide
- 3- Subcutaneous insulin: basal-bolus regime
- 4- Subcutaneous insulin: biphasic insulin regime
- 5- Intravenous sliding scale insulin

#### Answer & Comments

Answer: 5- Intravenous sliding scale insulin

It has been shown from previous trials (e.g. DIGAMI study) that insulin based glucose management leads to improved outcomes in type 2 diabetes post myocardial infarction. Good glycaemic control can be achieved with a sliding scale insulin regime or Glucose Insulin Potassium (GIK) regime.



[ Q: 2348 ] MRCPass - 2011  
September

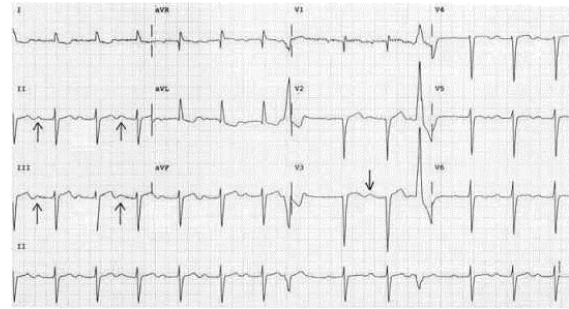
*On a ECG, which one of the following features is seen with significant Hypokalaemia?*

- 1- Flattened p wave
- 2- Prominent r wave
- 3- Flattened t wave
- 4- Prominent u wave
- 5- Prominent j wave

#### Answer & Comments

Answer: 4- Prominent u wave

The prominent U wave is a component seen after a T wave seen in severe Hypokalaemia.



U waves



[ Q: 2349 ] MRCPass - 2011  
September

A 73 year old woman complained of pain at the base of her right thumb.

On examination, there was tenderness and swelling of the right first carpo-metacarpal joint.

*What is the most likely diagnosis?*

- 1- Avascular necrosis of the scaphoid
- 2- De Quervain's tenosynovitis
- 3- Osteoarthritis
- 4- Psoriatic arthritis
- 5- Rheumatoid arthritis

#### Answer & Comments

Answer: 3- Osteoarthritis

The tenderness at the carpometacarpal joint is most likely due to osteoarthritis in a patient of this age.

Approximately 40% of post-menopausal females have radiographic changes at the base of the thumb. Abnormal loads across the joint cause the articular cartilage to wear out. Bony swelling is apparent in advanced cases and local palpation at the base of the thumb is tender.



[ Q: 2350 ] MRCPass - 2011  
September

A 14 year-old male presents with fever and headache, and within hours he felt neck pain when moving his head.

The following day, his blood pressure fell to 100/70 mmHg, and as a result, he was rushed to the hospital where he exhibited signs of confusion. Lumbar puncture was performed, and the cerebrospinal fluid (CSF) cultured *Neisseria meningitidis*. He has a history of 2 such previous presentations which were also diagnosed as meningococcal meningitis.

*What is the most likely underlying problem?*

- 1- Hypogammaglobulinaemia
- 2- HIV infection
- 3- Recurrent steroid use
- 4- Macrophage dysfunction
- 5- Complement deficiency

#### Answer & Comments

**Answer:** 5- Complement deficiency

Deficiencies in terminal pathway complements (C5-C9), particularly C8 complements are implicated in susceptibility to meningococcal infection.

The lack of membrane attack complex formation results in severe recurrent infection by *Neisseria gonorrhoeae* or *Neisseria meningitidis*.



[ Q: 2351 ] MRCPass - 2011  
September

An 18 year old man has had longstanding symptoms of vocal and motor tics. He displayed peculiar physical tics as well as repetitive throat clearings-despite the fact that he rarely had mucus or anything else bothering his throat. His physical tics consisted mainly of accentuated blinking and clenching/extending movements of the hands and sometimes feet.

*What is the diagnosis?*

- 1- Wallenberg's syndrome
- 2- Huntington's disease
- 3- Tourette's syndrome

- 4- Attention deficit hyperactivity disorder
- 5- Acute dystonia

#### Answer & Comments

**Answer:** 3- Tourette's syndrome

Tourette's syndrome is an inherited neuropsychiatric disorder with onset in childhood, characterized by multiple physical (motor) tics and at least one vocal (phonic) tic; these tics characteristically wax and wane.

The tics are sudden, repetitive, stereotyped, nonrhythmic movements (motor tics) and utterances (phonic tics) that involve discrete muscle groups.

Motor tics are movement-based tics, while phonic tics are involuntary sounds produced by moving air through the nose, mouth, or throat. In the above case, the patient has hemifacial spasms causing blinking and athetoid movements of the hands and feet.



[ Q: 2352 ] MRCPass - 2011  
September

A 55-year-old man presented with a 10 -year history of an intermittent rash and pruritus associated with sweating from exertion. For 2 years he had noted pruritus and erythema mainly in the hands and feet, occurring on exposure to cool weather and resolving promptly on warming. He has a past medical history of Investigations showed a normal full blood count and mildly deranged liver function tests. Cryoglobulin levels were elevated.

*Which one of the following is likely to be a cause?*

- 1- Hepatitis C
- 2- Staph aureus pneumonia
- 3- Colorectal carcinoma
- 4- Breast carcinoma
- 5- Osteoarthritis



## Answer &amp; Comments

Answer: 1- Hepatitis C

Cryoglobulinaemia occurs when there are large amount of proteins that become insoluble at reduced temperatures.

Type I is most commonly encountered in patients with multiple myeloma. Types II and III are strongly associated with infection by the hepatitis C virus.

Types II and III have Rheumatoid Factor activity and bind to polyclonal immunoglobulins.

Cryoglobulins may also be present in mycoplasma pneumonia, leukemias, primary macroglobulinemia, and some autoimmune diseases, such as systemic lupus erythematosus and rheumatoid arthritis.



[ Q: 2353 ] MRCPass - 2011  
September

B-type natriuretic peptide (BNP) is used as a serum marker for cardiac failure.

*Where is it predominantly secreted from?*

- 1- Kidney
- 2- Liver
- 3- Brain
- 4- Cardiac ventricle
- 5- Pancreas

## Answer &amp; Comments

Answer: 4- Cardiac ventricle

BNP is secreted mainly from the left ventricle in normal adult humans (as well as in patients with left ventricular dysfunction), whilst ANP is secreted from atria.



[ Q: 2354 ] MRCPass - 2011  
September

A 60-year-old male presents with a stroke and the CT scan shows a large territory of the

frontal lobe had infarcted acutely.

*Which one of the following is a test of frontal lobe dysfunction?*

- 1- Inability to draw a clock face
- 2- Inability to generate a list rapidly
- 3- Intention tremor with finger nose testing
- 4- Sensory inattention
- 5- Visual field defects

## Answer &amp; Comments

Answer: 2- Inability to generate a list rapidly

An inability to draw a clock face is associated with constructional apraxia in parietal lobe damage.

A failure to generate a list rapidly is a test of frontal lobe (e.g. name animals in 60 seconds with words beginning from letter F etc). Intention tremor is a cerebellar sign

Sensory inattention is a manifestation of parietal lobe dysfunction.

Visual field defect is a manifestation of occipital lobe (homonymous hemianopia), temporal lobe (superior quadrantanopia) or parietal lobe (inferior quadrantanopia) pathology.



[ Q: 2355 ] MRCPass - 2011  
September

A 66 year old man presents with a three month history of fever, malaise, anorexia, twenty-five pound weight loss, diffuse myalgias and night sweats, and more recently hemoptysis. He had a past medical history of hypertension, and described episodes of haematuria. Physical examination showed that he had diffuse lower extremity muscle tenderness, crepitations in the lungs and a rash on the trunks. Chest x-ray showed bilateral diffuse pulmonary infiltrates and also 2 areas of cavitation.

Investigations showed:



urine protein 1+

urine sediment - many red blood cell and granular casts

sodium 135 mmol/l

potassium 5.2 mmol/l

urea 14 mmol/l

creatinine 220 µmol/l

*What investigation should be organised next?*

- 1- Urine culture
- 2- Anti neutrophil cytoplasmic antibody
- 3- Renal biopsy
- 4- CT of kidney, ureter, bladder
- 5- MR angiogram of the kidneys

#### Answer & Comments

Answer: 2- Anti neutrophil cytoplasmic antibody

The diagnosis fits a pulmonary renal syndrome such as Wegener's, Churg Strauss or Goodpasture's syndrome.

Apart from renal failure, there may be pulmonary haemorrhage, haemoptysis, infiltrates on the CXR as well as cavitation.

The least invasive method initially to confirm a vasculitis is to request an ANCA.



[ Q: 2356 ] MRCPass - 2011  
September

A 47 year old lady presented to her GP with lesions in skin that were circular with an erythematous raised rim with central atrophy. There was scaliness, follicular plugging, and telangiectasia over the scalp, ears and face.

This was confirmed to be discoid lupus by the dermatologist and she has been tried on betnovate steroid topical treatment but has not improved.

*What should be used next?*

- 1- Diprobase cream

2- Tacrolimus

3- Azathioprine

4- Hydroxychloroquine

5- PUVA therapy

#### Answer & Comments

Answer: 4- Hydroxychloroquine

Discoid lupus erythematosus (DLE) is a chronic, scarring, atrophy producing, photosensitive dermatosis.

DLE may occur in patients with systemic lupus erythematosus (SLE). Skin lesions are typically localized above the neck, with favored sites being the scalp, bridge of nose, cheeks, lower lip, and ears. The primary lesion is an erythematous papule or plaque with slight-to-moderate scaling. As the lesion progresses, the scale may thicken and become adherent, and pigmentary changes may develop, with hypopigmentation in the central or inactive area and hyperpigmentation at the active border.

Initial treatment comprises the avoidance of direct sunlight. Following this, Hydroxychloroquine is the gold standard treatment. Other options include azathioprine, dapsone, thalidomide and tacrolimus.



[ Q: 2357 ] MRCPass - 2011  
September

A 41 year old lady has been seen for symptoms of joint stiffness, swelling and pains. On examination, she has features of wrist subluxation, ulnar deviation of her hands and rheumatoid nodules. She is investigated with X rays of her hand.

*Which one of the following features is expected in rheumatoid arthritis?*

- 1- Subchondral sclerosis
- 2- Marginal osteophyte formation
- 3- Subchondral cyst

4- Periarticular osteopenia

5- Compression fractures

**Answer & Comments**Answer: 4- Periarticular osteopenia

- Findings on XRay consistent with Rheumatoid Arthritis are:

- Narrowing of joint space
- Periarticular osteopenia
- Juxtaarticular bony Erosions
- Subluxation and gross deformity
- Periarticular soft tissue swelling

- XRay Findings in Osteoarthritis

- Non-uniform narrowing of joint space
- Subchondral bony sclerosis
- Marginal osteophyte formation
- Subchondral Cyst formation



[ Q: 2358 ] MRCPass - 2011  
September

A 23 year old male medical student was brought to hospital by his girlfriend who was concerned about his behaviour.

He has just returned from a student elective in the United States. Whilst he was being assessed he appeared anxious and agitated. He was restless and paced up and down the corridor. He spoke very quickly.

Upon questioning, he said that he was doing extremely well in medicine and soon was to become the dean of the medical school.

*What is the most likely diagnosis?*

- 1- Paranoid schizophrenia
- 2- Anxiety disorder
- 3- Hypomania
- 4- Delusional disorder
- 5- Obsessive compulsive disorder

**Answer & Comments**Answer: 3- Hypomania

Hypomania is a mood state characterized by persistent and pervasive elated or irritable mood, and thoughts and behaviour that are consistent with such a mood state.

It is distinguished from mania by the absence of psychotic symptoms and by its lower degree of impact on functioning. Patients often have pressured speech and grandiosity.

There may be flight of ideas, lack of sleep and inability to slow the mind down.



[ Q: 2359 ] MRCPass - 2011  
September

A 26 year old woman presents with lethargy, polyuria and nausea. She has no past medical history and is currently not taking medications. Her blood results are: sodium 135 mmol/l, potassium 4.3 mmol/l, urea 7 mmol/l, creatinine 90 µmol/l, calcium 3.2 (2.25-2.7) mmol/l, phosphate 0.3 (0.8-8) pmol/l, Parathyroid hormone 18 (0.8-8) pmol/l.

*What is the likely cause of hypercalcaemia?*

- 1- Chronic kidney disease
- 2- Hypophosphataemia
- 3- Primary hyperparathyroidism
- 4- 1,25 (OH) vitamin D supplementation
- 5- Hypocalciuric hypophosphataemic rickets

**Answer & Comments**Answer: 3- Primary hyperparathyroidism

The case scenario is consistent with primary hyperparathyroidism.

PTH enhances active reabsorption of calcium and magnesium from distal tubules and of the kidney. As bone is degraded both calcium and phosphate are released. It also greatly

increases the excretion of phosphate, with a net loss in plasma phosphate concentration.

By increasing the calcium:phosphate ratio more calcium is therefore free in the circulation.

PTH enhances the absorption of calcium in the intestine by increasing the production of activated vitamin D. PTH

up-regulates the enzyme responsible for 1-alpha hydroxylation of 25-hydroxy vitamin D, converting vitamin D to its active form (1,25-dihydroxy vitamin D).

PTH stimulates bone resorption by osteoclasts.



[ Q: 2360 ] MRCPass - 2011  
September

A 71 year old man has a diagnosis of non small cell lung tumour, and has completed a set of investigations.

*Which one of the following is a contraindication to lung surgery?*

- 1- FEV1 of 1.7 L (50% predicted)
- 2- Horner's syndrome
- 3- History of myocardial infarction
- 4- Hypercalcaemia
- 5- Peripheral neuropathy

#### Answer & Comments

Answer: 2- Horner's syndrome

An FEV1 of < 1.1 L is a contraindication for most cardiothoracic surgical procedures.

A malignant pleural effusion, distant metastases, contralateral mediastinal lymph node spread, vocal cord paralysis, phrenic nerve paralysis, Horner's syndrome, and SVC syndrome are contraindications to surgery in lung cancer.



[ Q: 2361 ] MRCPass - 2011  
September

A 56 year old man with insulin dependent diabetes has routine follow up in the clinic. On examination, neovascularization was found on fundoscopy. Blood pressure was 146/92mm Hg.

*What is the treatment of choice?*

- 1- Better glycaemic control
- 2- Follow up after 3 months
- 3- Photocoagulation
- 4- Better pressure control
- 5- Statin

#### Answer & Comments

Answer: 3- Photocoagulation

Treatment is directed at regressing neovascularisation using Argon laser pan-retinal photocoagulation.

The new vessels themselves are not targeted but photocoagulation is spread over a wide area in order to destroy ischaemic retina and remove the vasoproliferative stimulus. There is variable visual loss and night blindness.



[ Q: 2362 ] MRCPass - 2011  
September

A 56 year old lady has known mitral valve stenosis from rheumatic heart disease. She presents with new symptoms of breathlessness.

Upon examination, *which one of the following signs would suggest that she has mitral regurgitation?*

- 1- Displaced apex beat
- 2- Early diastolic murmur in the pulmonary area
- 3- Right ventricular heave
- 4- V wave seen with the JVP
- 5- Opening snap

## Answer &amp; Comments

**Answer:** 1- Displaced apex beat

In mitral stenosis, the apex beat is classically tapping in nature and not displaced.

Mitral regurgitation on the other hand, causes ventricular strain and dilatation. Most of the other signs described in the above options can occur with pulmonary hypertension due to significant mitral stenosis.



[ Q: 2363 ] MRCPass - 2011  
September

A 30 year old woman has been investigated for hypertension and weight gain. The 25 hour urine cortisol and dexamethasone suppression tests confirm significant Cushing's syndrome with excessively high cortisol levels.

*Which one of the following is the most like acid base finding?*

- 1- Respiratory acidosis
- 2- Respiratory alkalosis
- 3- Metabolic alkalosis
- 4- Metabolic acidosis
- 5- Neutral pH

## Answer &amp; Comments

**Answer:** 3- Metabolic alkalosis

With severe hypercortisolism, hypokalemic metabolic alkalosis may occur.

Hypokalemic metabolic alkalosis may occur in patients with urinary free cortisol (UFC) levels higher than 1500 mcg/24-h.



[ Q: 2364 ] MRCPass - 2011  
September

A 66-year-old female is brought to A&E by her family, who are concerned about her increasing confusion over the past 2 days. There is a history of diarrhea in the preceding few days. On examination she is found to be

pyrexial at 38 C. Breath sounds are clear and there is mild tenderness in the lower abdomen. There was no focal neurological signs.

Blood tests reveal :

Hb 9.6 g/dl

WCC  $12 \times 10^9/l$

Platelets  $65 \times 10^9/l$

sodium 138 mmol/l

potassium 4.7 mmol/l

Urea 18.1 mmol/l

Creatinine 210  $\mu\text{mol/l}$

A blood film shows schistocytes and thrombocytopenia.

*What is the most likely diagnosis?*

- 1- Wegener's granulomatosis
- 2- Thrombotic thrombocytopenic purpura
- 3- Goodpasture's disease
- 4- Idiopathic thrombocytopenic purpura
- 5- Rapidly progressive glomerulonephritis

## Answer &amp; Comments

**Answer:** 2- Thrombotic thrombocytopenic purpura

Thrombotic thrombocytopenic purpura (TTP), involvement of the CNS predominates in TTP (neurological signs) whilst in HUS there is mainly renal involvement.

Most cases of TTP arise from inhibition of the enzyme ADAMTS13, a metalloprotease responsible for cleaving large multimers of von Willebrand factor (vWF) into smaller units.

Neurologic symptoms (confusion, headaches, stroke), low platelet count, renal impairment and microangiopathic haemolytic anaemia are present.



[ Q: 2365 ] MRCPass - 2011  
September

A 36 year old lady upper middle class white lady who used to be an athlete has been referred for investigation due to tiredness. She mentions fatigue which is chronic and occurs even after minor physical work. This has been going on for 3 years. Investigations including CK, ESR, EMGs and muscle biopsy have revealed no obvious medical cause for this.

*Which of the following is the best treatment?*

- 1- Erythropoietin injection
- 2- Cognitive behavioural therapy
- 3- Graded exercise programme
- 4- Codeine
- 5- Fluoxetine

#### Answer & Comments

Answer: 3- Graded exercise programme

Chronic Fatigue syndrome is defined by symptoms and not signs.

The clinical profile of an individual with CFS is of a high-achieving student or athlete who usually is female (80%), white, and middle-class to upper middle-class.

Treatment is largely supportive and responsive to symptomatology. This includes physical therapy and modest aerobic or anaerobic exercise (if possible) to avoid cardiovascular deconditioning. Sleep may be addressed with medication; often, melatonin or night-time amitriptyline is helpful. If present and severe, pain often is addressed in a pain clinic.



[ Q: 2366 ] MRCPass - 2011  
September

A 50 year-old woman developed symptoms decreased sleep and increased anxiety over 2 months. She was constantly worried about

contracting bird flu. Although there was no epidemic at the moment, she refused to go out to the garden to collect the washing as she felt that there were birds which would cause flu transmission.

Her husband witnessed that she was hearing voices when there was no one speaking.

*What is the diagnosis?*

- 1- Mania
- 2- Psychotic depression
- 3- Paranoid schizophrenia
- 4- Conversion disorder
- 5- Anxiety disorder

#### Answer & Comments

Answer: 3- Paranoid schizophrenia

This lady has delusions and paranoid symptoms consistent with paranoid schizophrenia.

Schizophrenia most commonly manifests as auditory hallucinations, paranoid or bizarre delusions, or disorganized speech and thinking, and it is accompanied by significant social or occupational dysfunction. Delusions are persecutory and/or grandiose, but in addition to these, other themes such as jealousy, religiosity, or somatization may also be present.



[ Q: 2367 ] MRCPass - 2011  
September

A 46-year-old woman presented with a chief complaint of heavy smoking and a desire to quit. She has a history of diabetes, hypertension, migraines and epilepsy. The patient's social histories revealed a 3 pack per year smoking history, minimal alcohol use, and no illicit drug use. Given her desire to quit smoking, the patient planned to be started on bupropion 100 mg daily for 1 week, with goal titration to 150 mg twice daily by the end of week.

Which one of the following is a contraindication?

- 1- Diabetes
- 2- Hypertension
- 3- Ischaemic heart disease
- 4- Epilepsy
- 5- Migraines

#### Answer & Comments

**Answer:** 4- Epilepsy

Bupropion is an atypical antidepressant that acts as a norepinephrine and dopamine reuptake inhibitor, and nicotinic antagonist.

Initially researched and marketed as an antidepressant, bupropion was subsequently found to be effective as a smoking cessation aid.

The manufacturers, GSK, advises that bupropion should not be prescribed to individuals with epilepsy or other conditions that lower the seizure threshold, such as alcohol or benzodiazepine discontinuation.



[ Q: 2368 ] MRCPass - 2011  
September

A 36-year old man was referred with a two-month history of generalised weakness, fever, and weight loss.

There was no other relevant past medical history. Physical examination revealed a moderately wasted young man with severe pallor and pyrexia of 39°C. The spleen was palpable 6 cm below the left costal margin.

Blood results showed:

Hb was 9 g/dl

haematocrit was 18%

white cell count  $5.3 \times 10^9/l$

platelet count was  $89 \times 10^9/l$

His reticulocyte count was  $<0.0001\%$ .

There were some tear drop erythrocytes in his blood film with 4 normoblasts per 100 leucocytes interspersed by myelocytes. The bone marrow biopsy showed replacement of normal haemopoietic elements by early fibrosis.

**What is the likely diagnosis?**

- 1- Chronic myeloid leukaemia
- 2- Essential thrombocythaemia
- 3- Myelofibrosis
- 4- Multiple myeloma
- 5- Waldenstrom's macroglobulinaemia

#### Answer & Comments

**Answer:** 3- Myelofibrosis

Myelofibrosis is a chronic, progressive myeloproliferative disease.

It is characterised by prominent bone marrow stromal reaction including collagen fibrosis and osteosclerosis.

Clinical features include lethargy, constitutional symptoms, transfusion dependent anaemia, splenomegaly, tear drop poikilocytosis, and a leucoerythroblastic blood film. A leucoerythroblastic picture on blood film is commonly seen in conditions with marrow infiltration. Immature cells (myelocytes and normoblasts) are also seen on the blood film.



[ Q: 2369 ] MRCPass - 2011  
September

A 14 year old male patient has long standing history of difficulty gaining weight, polyuria and recurrent infections.

On examination, he had a blood pressure of 120 / 70 mmHg, abdomen was soft, non tender and there were no localizing signs on neurological examination. Investigations showed a metabolic alkalosis. The patient was diagnosed with Bartter's syndrome.



*What other abnormality is likely to be present?*

- 1- Hyponatraemia
- 2- Hypernatraemia
- 3- Hypokalaemia
- 4- Hyperchloraemia
- 5- Hypermagnesaemia

#### Answer & Comments

Answer: 3- Hypokalaemia

The clues here are hypokalaemia and normal blood pressure pointing towards Bartter's syndrome.

Both Conn's and Cushing's syndrome are associated with hypertension. Bartter's syndrome (autosomal recessive) is an inherited renal tubular disorder characterized by hypokalemia, hypochloremic metabolic alkalosis, hyperreninemia, hyperprostaglandinism, normal blood pressure, with increased urinary loss of sodium, chloride, potassium, calcium.

Vomiting, diarrhoea polyuria and poor growth are presenting symptoms.

Different forms of renal tubular defects are found in Bartter's syndrome, and the Na-K-2Cl transporter is a common defect. Failure to reabsorb chloride results in a failure to reabsorb sodium and leads to excessive sodium and chloride (salt) delivery to the distal tubules, leading to excessive salt (including calcium) and water loss from the body. The renin-angiotensin-aldosterone system is activated due to hypovolaemic state, but helps to maintain a normal blood pressure.



[ Q: 2370 ] MRCPass - 2011  
September

A 20 year-old man presents with facial and ankle swelling which has slowly been developing over the past 2 weeks. There were no urinary symptoms and no family history of

renal disease. On examination, he was pale and thin with ankle oedema and a blood pressure of 130/80.

Investigations showed normal haemoglobin and white cell count and an erythrocyte sedimentation rate (ESR) of 32mm/hr. His blood urea was 9.1mmol/l (2.5-7.5), serum albumin 26g/l and a creatinine clearance of 106ml/min.

His serum immunoglobulin IgM and IgA, C3 and C4 levels were normal. Antinuclear antibodies and hepatitis B surface antigen were not detected, and the antistreptolysin O titre was not raised. A urine dipstick shows protein ++++ and 24 hour urine collection demonstrated urinary protein loss of 7.8g/day.

*What is the most likely cause of this presentation?*

- 1- IgA nephropathy
- 2- Focal segmental glomerulonephritis
- 3- Minimal change disease
- 4- Membranous glomerulonephritis
- 5- Renal cell carcinoma

#### Answer & Comments

Answer: 4- Membranous glomerulonephritis

With no haematuria, IgA nephropathy is unlikely.

The most likely options are minimal change and membranous. Due to the age of presentation, membranous glomerulonephritis is the best answer.

Minimal change nephropathy is responsible for 90% of the cases of nephrotic syndrome in children less than 5 years of age. The name is due to the fact that the only detectable abnormality histologically is fusion and deformity of the foot processes under the electron microscope. It also occurs in adults - approx 20%. Normal renal function and blood pressure are typical.

Membranous glomerulonephritis often presents with nephrotic syndrome in males. It is characterized histologically by thickening of the capillary basement membrane secondary to the deposition of immune complexes. It is associated with SLE, drugs and malignancy. About 33% of patients affected go into spontaneous remission over five years, but the remainder are likely to develop progressive renal failure

Focal segmental glomerulonephritis is a possibility for nephrotic presentation but is often associated with HIV and malignancy, and less common.



[ Q: 2371 ] MRCPass - 2011  
September

A 35 year old lady has a past history of two episodes of deep vein thrombosis and two miscarriages. During investigation she was found to have positive anti cardiolipin antibody.

*What is the best treatment?*

- 1- Clopidogrel
- 2- Warfarin 3 months
- 3- Long term low molecular weight heparin
- 4- Aspirin and Warfarin
- 5- Lifelong warfarin

#### Answer & Comments

Answer: 5- Lifelong warfarin

This patient with recurrent DVTs has the presence of lupus anticoagulant.

She requires lifelong warfarin treatment.



[ Q: 2372 ] MRCPass - 2011  
September

A 51-year-old man who had a large myocardial infarction of the anterior wall 20 years ago is on several cardiac medications.

*Which one of the following drugs is contraindicated for use with sildenafil?*

- 1- Doxazosin
- 2- Aspirin
- 3- Nicorandil
- 4- Atenolol
- 5- Ramipril

#### Answer & Comments

Answer: 3- Nicorandil

The combination of nitrates (and drugs such as nicorandil) with sildenafil is contraindicated.

This combination must be avoided as it can produce significant hypotension and is potentially fatal.



[ Q: 2373 ] MRCPass - 2011  
September

A 18-year-old man presented casualty complaining of difficulty breathing. He had brought hospital by ambulance, having collapsed shortly after being stung on hand by a bee. On examination, his blood pressure was 80/40 mmHg, facial swelling and pharyngeal oedema was noted.

*Which one of following investigations likely confirm anaphylaxis?*

- 1- Haemolytic complement (CH50) level
- 2- Serum tryptase activity
- 3- Complement C3 level
- 4- Total IgE level
- 5- Eosinophil count

#### Answer & Comments

Answer: 2- Serum tryptase activity

The reaction involves preferential production of IgE, in response certain antigens, which in turn initiates a sequence of events leading to mast cell activation.

According to the Resuscitation council guidelines, the specific test to help confirm a diagnosis of an anaphylactic reaction is measurement of mast cell tryptase.

Tryptase is the major protein component of mast cell secretory granules. In anaphylaxis, mast cell degranulation leads to markedly increased blood tryptase concentrations (Figure 4). Tryptase levels are useful in the follow-up of suspected anaphylactic reactions, not in the initial recognition and treatment: measuring tryptase levels must not delay initial resuscitation. Tryptase concentrations in the blood may not increase significantly until 30 minutes or more after the onset of symptoms, and peak 1-2 hours after onset.

The half-life of tryptase is short (approximately 2 hours), and concentrations may be back to normal within 6-8 hours, so timing of any blood samples is very important.

<http://www.resus.org.uk/pages/reaction.pdf>



[ Q: 2374 ] MRCPass - 2011  
September

A 41 year old patient with previous tonic clonic seizures is on sodium valproate 400mg bd.

*Which of the following is a common side-effect of sodium valproate?*

- 1- Gum hypertrophy
- 2- Weight loss
- 3- Hirsutism
- 4- Tremor
- 5- Thrombocytosis

#### Answer & Comments

Answer: 4- Tremor

Side effects of sodium valproate are tremor, weight gain, transient hair loss and thrombocytopenia.



[ Q: 2375 ] MRCPass - 2012 January

A 55 year old man was brought to the A&E with swelling of the face, bronchospasm and urticaria after he took some unknown food items.

On examination Blood pressure is 90/60mm of Hg. He gave a past history of food allergy.

*What is the route of administration of adrenaline which should be given?*

- 1- Intravenous
- 2- Intramuscular
- 3- Subcutaneous
- 4- Oral
- 5- Inhaled

#### Answer & Comments

Answer: 2- Intramuscular

Adrenaline 1 ml of a 1:1000 solution (1 mg) should be injected intramuscularly to treat anaphylaxis.



[ Q: 2376 ] MRCPass - 2012 January

A 40-year-old man was admitted with acute-onset lower back.

On examination he was pyrexial. He had restricted lumbar spine movement with pain at this site. He is currently on antihypertensive drugs and is allergic to penicillin.

Investigations showed a white cell count of  $22.0 \times 10^9/l$  ( $4.0-11.0 \times 10^9/l$ ), urea 8.0 mmol/l (2.5-7.5 mmol/l), creatinine of 160  $\mu\text{mol/l}$  (60-120  $\mu\text{mol/l}$ ), erythrocyte sedimentation rate (ESR) of 108 mm/h and CRP of 210 mg/l ( $<20 \text{ mg/l}$ ).

Blood cultures grew Methicillin sensitive staph aureus.

*What antibiotics should be commenced?*

- 1- Clarithromycin
- 2- Vancomycin

- 3- Penicillin
- 4- Linezolid
- 5- Ceftazidime

#### Answer & Comments

Answer: 2- Vancomycin

This is a case of septic discitis (infection of the spinal disc) due to staphylococcus.

Back pain, fever and neurological signs are often present in septic discitis. 40% of cases are due to staph aureus, and blood cultures are often positive. MRI of the spine will help to confirm the diagnosis. Treatment options include vancomycin, gentamicin and ceftazidime. The best first line option here would be vancomycin.



[ Q: 2377 ] MRCPass - 2012 January

A 65-year-old man is brought to A&E by his family, who are concerned him being tired and unwell. He has a previous history of myocardial infarction. He takes ramipril and bendrofluazide tablets. There was a history of diarrhea in the preceding few days. On examination his breath sounds are clear and there is mild tenderness in the lower abdomen.

Blood tests reveal :

Hb 9.4 g/dl

WCC  $12 \times 10^9/l$

Platelets  $65 \times 10^9/l$

sodium 138 mmol/l

potassium 4.7 mmol/l

Urea 23.1 mmol/l

Creatinine 366  $\mu\text{mol/l}$

*What is the blood film likely to show ?*

- 1- Target cells
- 2- Howell jolly body
- 3- Red cell casts

- 4- Fragmented red blood cells
- 5- Spherocytes

#### Answer & Comments

Answer: 4- Fragmented red blood cells

The diagnosis is Hemolytic uremic syndrome (HUS).

It is characterized by the triad of microangiopathic hemolytic anemia, thrombocytopenia, and acute renal failure. Diarrhea and upper respiratory infection are the most common precipitating factors. The most common cause of HUS is a toxin produced by *Escherichia coli* serotype O157:H7.

Additional agents include *Shigella*, *Salmonella*, *Yersinia*, and *Campylobacter* species.

Although the vascular lesions are identical in HUS and Thrombotic thrombocytopenic purpura (TTP), involvement of the CNS predominates in TTP (neurological signs) whilst in HUS there is mainly renal involvement.

The hallmark of HUS in the peripheral smear is the presence of schistocytes. These consist of fragmented, deformed, irregular, or helmet-shaped RBCs



[ Q: 2378 ] MRCPass - 2012 January

A 22 year old woman presents bilateral leg weakness following an episode of diarrhoea 2 weeks ago. She is suspected of having Guillain-Barre syndrome.

*Which of the following test results is likely on the neurological tests?*

- 1- Fibrillations on the EMG
- 2- Slow conduction velocities in the nerve conduction study
- 3- Decreased visual evoked potential

- 4- Increased amplitude in the nerve conduction study
- 5- Shortened latencies in the nerve conduction study

#### Answer & Comments

Answer: 2- Slow conduction velocities in the nerve conduction study

In Guillain Barre syndrome, Electromyography (EMG) and nerve conduction studies (NCS) may show prolonged distal latencies, conduction slowing, conduction block, and temporal dispersion of compound action potential in demyelinating cases.



[ Q: 2379 ] MRCPass - 2012 January

A 23 year old man with learning difficulties is brought for review by his worried parents after he complained of visual blurring.

Examination with a slit lamp reveals ectopia lentis.

*What is the most likely diagnosis?*

- 1- Marfan's syndrome
- 2- Klinefelter's syndrome
- 3- Ehler Danlos
- 4- Homocystinuria
- 5- Fragile X syndrome

#### Answer & Comments

Answer: 4- Homocystinuria

Ectopia lentis/ subluxation of the lens is associated with Ehlers Danlos syndrome, Marfan's syndrome and homocystinuria.

There is downwards lens dislocation in homocystinuria.



[ Q: 2380 ] MRCPass - 2012 January

A 62 year old lady presented with a fall and fractured wrist. She was organised to

have a DEXA scan. This showed a T score of -2.6 in the hip and a score of -2.1 in the femur.

*What does this mean?*

- 1- Normal values on the scan
- 2- osteopenia of the hip and osteoporosis of the femur
- 3- Osteoporosis of the hip and osteopenia of the femur
- 4- Osteopenia of both areas
- 5- Osteoporosis of both areas

#### Answer & Comments

Answer: 3- Osteoporosis of the hip and osteopenia of the femur

The T score is usually used to make treatment decisions using standard deviation (SD).

The SD measures the difference between the BMD and that of a healthy young adult (the reference value). Every -1 SD ("minus 1 standard deviation") equals a 10 to 12% decrease in bone density. T score results are classified as follows:

A T score between 0 and -1 standard deviation (SD) is considered to be normal.

A T score between -1 and -2.5 SD is classified as osteopenia (low bone mass).

A T score of -2.5 SD or less is classified as osteoporosis (very low bone mass).



[ Q: 2381 ] MRCPass - 2012 January

A 58-year-old Caucasian male presents with weight loss and severe muscular weakness. He was a heavy smoker and drinks 20 units of alcohol per day. His medical history included hypertension and gastrointestinal reflux. On examination, he had a blood pressure of 120 / 70 mmHg, abdomen was soft, non tender.

Investigations showed:

sodium 136 mmol/l

potassium 2.4 mmol/l,

calcium 1.6 (2.25-2.7) mmol/l

phosphate 0.8 (0.8-8) pmol/l,

chloride 86 (95-107) mmol/l

bicarbonate 33 (20-28) mmol/l

*What other abnormality is likely to be found?*

- 1- Hyperthyroidism
- 2- Hyperaldosteronism
- 3- Hypoglycaemia
- 4- Hyperlipidaemia
- 5- Hypomagnesaemia

#### Answer & Comments

Answer: 5- Hypomagnesaemia

The laboratory findings of hypokalaemia, hypocalcaemia, hypomagnesaemia and metabolic alkalosis can occur in severe alcoholic patients.

Correction of these electrolyte abnormalities with cautious refeeding is important.



[ Q: 2382 ] MRCPass - 2012 January

A 43-year-old woman is found to be hypertensive but referred by the GP due to poorly controlled hypertension.

The patient received 3 antihypertensive medications including a beta-blocker, diuretic and a calcium channel blocker. Her blood pressure is consistently above 150 mmHg systolic. There is no family history of hypertension.

Her renal function is normal but urine dipstick testing shows + blood. A renal ultrasound shows kidney sizes of 7.5 in the right and 7 cm in the left.

*What is the most likely cause of this patient's hypertension?*

- 1- Autosomal dominant polycystic kidney disease



- 2- Conn's syndrome
- 3- Essential hypertension
- 4- Fibromuscular dysplasia
- 5- Cushing's syndrome

#### Answer & Comments

Answer: 4- Fibromuscular dysplasia

Fibromuscular dysplasia (FMD) is a nonatherosclerotic angiopathy of unknown etiology.

Medial FMD represents the most common type and is characterized by the classic "string of beads" appearance. FMD usually affects females between 15 and 50 years of age, frequently involves the mid or/and distal segments of the renal artery and is bilateral in 2/3 of the patients. Often, hypertension tends to be refractory to simple drug therapy.

Percutaneous transluminal renal angioplasty (PTRA) should be considered in well-defined groups of patients: those with a recent onset of hypertension (in particular patients younger than 50 who are less likely to have underlying atherosclerotic disease) in whom the goal is to cure the hypertension.



[ Q: 2383 ] MRCPass - 2012 January

A 43 year old man presents to A+E complaining of severe lower back pain following carpentry work. The pain radiates to his left buttock and thigh. On examination, he was able to straight leg raise to 45 degrees only on the left side. The sciatic stretch test is positive. He has difficulty plantar flexing his left ankle and has abnormal sensation on the plantar aspect of the foot. The left ankle reflex was difficult to elicit.

*What is the diagnosis?*

- 1- Cauda equina syndrome
- 2- L2/L3 disc prolapse
- 3- L4/L5 disc prolapse

- 4- L5/S1 disc prolapse
- 5- Common peroneal nerve injury

#### Answer & Comments

Answer: 4- L5/S1 disc prolapse

Ankle dorsiflexion is generally supplied by L4/L5 and plantar flexion supplied by S1/S2.

The history of back pain and neurological signs is consistent with an L5/S1 disc prolapse.



[ Q: 2384 ] MRCPass - 2012 January

A 55-year-old female presented with dyspnea, orthopnea, lower extremities swelling, palpitations. Physical examination revealed an irregular pulse 80 beats/min, blood pressure of 100/60 mmHg and bibasal crackles on chest auscultation. The jugular veins were distended and there was evidence of CV waves. She had a left parasternal heave. There was a systolic murmur at the upper left border of the sternum which was louder with inspiration. The second heart sounds were fixed, wide and split.

*What is the most likely diagnosis?*

- 1- Aortic stenosis
- 2- Mitral regurgitation
- 3- Atrial septal defect
- 4- Pulmonary stenosis
- 5- Pulmonary regurgitation

#### Answer & Comments

Answer: 3- Atrial septal defect

In an ASD, there may be an ejection systolic murmur that is due to the increased flow of blood through the pulmonic valve rather than any structural abnormality of the valve leaflets.

In unaffected individuals, there are respiratory variations in the splitting of the

second heart sound (S2). In individuals with an ASD, there is a fixed splitting of S2.

This does not occur with pulmonary stenosis. There is also evidence of right heart strain (tricuspid regurgitation, right ventricular hypertrophy causing left parasternal heave).



[ Q: 2385 ] MRCPass - 2012 January

A 35-year-old Caucasian woman admitted has a history of widespread, pruritic, erythematous skin rash, joint pains and renal disease. She recently had a baby with congenital heart block. Laboratory investigations revealed mild leucopenia (white cell count  $3.25 \times 10^9/\text{ml}$ ) and thrombocytopenia (platelets  $140 \times 10^9/\text{ml}$ ). Erythrocyte sedimentation rate was increased (65 mm/h).

*Which antibody is likely to be positive?*

- 1- Anti Jo 1
- 2- Anti double stranded DNA
- 3- Anti Ro
- 4- Anti centromere
- 5- ANCA

#### Answer & Comments

Answer: 3- Anti Ro

The anti Ro antibody is associated with Sjogren's syndrome, SLE and neonatal lupus.

Neonatal lupus erythematosus (NLE) is a rare disorder caused by the transplacental passage of maternal autoantibodies. Only 1% of infants with positive maternal autoantibodies develop neonatal lupus erythematosus. The most common clinical manifestations are cardiac (congenital heart block), dermatologic (urticaria and skin desquamation), and hepatic (abnormal LFTs). The mother produces immunoglobulin G (IgG) autoantibodies against Ro (SSA), La (SSB), and/or U1-ribonucleoprotein (U1-RNP), and they are passively transported across the

placenta. These autoantibodies can be found alone or in combination; However, anti-Ro is present in almost 95% of patients.



[ Q: 2386 ] MRCPass - 2012 January

A 30 year old lady presented with joint pains which has been present for 2 years but were getting more severe.

After clinical examination, blood tests and x rays, she has been diagnosed with rheumatoid arthritis. The rheumatoid factor was negative. Hand X rays showed osteopenia and joint erosions.

*Which one of the following carries the poorest prognostic factor?*

- 1- Rheumatoid factor negative
- 2- Joint erosions
- 3- Female sex
- 4- Insidious onset
- 5- Age of 30 years

#### Answer & Comments

Answer: 2- Joint erosions

Poor prognostic factors in Rheumatoid arthritis include persistent synovitis, early erosive disease, extra-articular findings (including subcutaneous rheumatoid nodules), positive serum RF findings, positive serum anti-CCP autoantibodies, carrier of HLA-DR4 alleles, family history of RA, poor functional status, socioeconomic factors, elevated acute phase response ESR, CRP, and increased clinical severity.



[ Q: 2387 ] MRCPass - 2012 January

A 42-year-old man with end-stage renal disease (ESRD) who was receiving hemodialysis was admitted with fevers and rigors.

He has been having dialysis via a tunnelled subclavian central venous catheter for

several weeks. The patient was febrile and had a WBC count of  $18 \times 10^3/\mu\text{L}$ .

*What is the most likely cause of septicaemia in this patient?*

- 1- Escherichia coli
- 2- Listeria monocytogenes
- 3- Staphylococcus aureus
- 4- Staphylococcus epidermidis
- 5- Streptococcus pyogenes

#### Answer & Comments

**Answer:** 3- Staphylococcus aureus

Staph aureus and pseudomonas are common organisms causing sepsis in dialysis patients with central venous lines.

Coagulase negative staph (staph epidermidis) are common commensal organisms but do not usually lead to sepsis in these patients.



[ Q: 2388 ] MRCPass - 2012 January

A 47-year-old man with habitual smoking habit (2 packs per day) presents with haemoptysis. He also suffered had poor appetite for 6 months and body weight loss (loss 6 kilograms). A chest X ray shows a suspicious lesion in the left lung. His blood results are:

Hb 11.5 g/dl, MCV 75 fl, WCC  $6 \times 10^9/\text{l}$ , platelets  $200 \times 10^9/\text{l}$ , sodium 125 mmol/l, potassium 4.5 mmol/l, urea 5 mmol/l, creatinine 100  $\mu\text{mol/l}$ .

*Which one of the following is the most likely lung cancer in this patient?*

- 1- Squamous cell
- 2- Small cell
- 3- Adenocarcinoma
- 4- Large cell
- 5- Carcinoid

#### Answer & Comments

**Answer:** 2- Small cell

Small-cell lung cancer accounts for approximately 20-25% of all cases of lung cancer.

It is strongly associated with smoking. Small cell carcinomas produce ACTH and ADH, which can lead to SIADH, the clue in the history is hyponatraemia.



[ Q: 2389 ] MRCPass - 2012 January

A 20-year-old man presents with discrete scaly papules affecting his trunk and upper arms. The eruption developed 2 weeks after an episode of acute exudative tonsillitis. He was treated with a course of penicillin for 5 days. On examination, there were small, drop-like, salmon-pink, 1 mm to 10 mm papules with a fine scale on the trunk and arms.

*What is the diagnosis?*

- 1- Erythema multiforme
- 2- Secondary syphilis
- 3- Guttate psoriasis
- 4- Dermatitis herpetiformis
- 5- Pityriasis versicolor

#### Answer & Comments

**Answer:** 3- Guttate psoriasis

Guttate psoriasis refers to a distinctive, acute clinical presentation of an eruption characterized by small, droplike, 1-10 mm in diameter, salmon-pink papules, usually with a fine scale.

It is more common in individuals younger than 30 years, a history of upper respiratory infection secondary to group A beta-hemolytic streptococci (eg, Streptococcus pyogenes) often precedes the eruption by 2-3 weeks. Although recurrent episodes may occur, especially those due to pharyngeal

carriage of streptococci, isolated bouts are known to occur. Usually, the psoriasis spontaneously disappears in a few weeks without treatment. Simple reassurance and emollients may be sufficient care.



[ Q: 2390 ] MRCPass - 2012 January

*Which one of the following HLA groups is genetically associated with rheumatoid arthritis?*

- 1- HLA B27
- 2- HLA B6
- 3- HLA DR3
- 4- HLA DR4
- 5- HLA A8

#### Answer & Comments

Answer: 4- HLA DR4

Rheumatoid arthritis has a genetic link with HLA-DR4 and related allotypes of MHC Class II and the T cell-associated protein PTPN22.



[ Q: 2391 ] MRCPass - 2012 January

A 30 year old woman is admitted to hospital due to concerns from her relatives with lack of sleep and agitation.

When giving a history, she says that she is the Queen of England and continues talking despite interruption by the doctor.

*What is this feature?*

- 1- Circumstantiality
- 2- Flight of ideas
- 3- Pressure of speech
- 4- Paranoia
- 5- Thought intrusion

#### Answer & Comments

Answer: 3- Pressure of speech

Patients with mania often have pressured speech and grandiosity.

There may be flight of ideas, lack of sleep and inability to slow the mind down. Pressure of speech is a tendency to speak rapidly and frenziedly, as if motivated by an urgency not apparent to the listener.



[ Q: 2392 ] MRCPass - 2012 January

A new blood test is being evaluated for measuring the likelihood of heart failure (HF), as compared to echocardiography as a gold standard. In the study, the following results are obtained:

	Blood test positive	Blood test negative
Echo -HF	720	10
Echo - no HF	30	890

*What is the negative predictive value of the blood test?*

- 1- 30/750
- 2- 30/780
- 3- 890/900
- 4- 890/10
- 5- 890/30

#### Answer & Comments

Answer: 3- 890/900

Negative predictive value is the number of true negatives found by a negative blood test, in this case,  $890 / (890 + 10)$ .



[ Q: 2393 ] MRCPass - 2012 January

A 55 year old man presented with severe retrosternal chest pain.

He has history of hypertension and diabetes.

His ECG shows anterior wall myocardial infarction with ST elevation in leads V1 to V4. He has been given Aspirin, Clopidogrel and

continues to have chest pains. Tirofiban is then commenced.

*What is tirofiban's mechanism of action?*

- 1- Tissue plasminogen activator
- 2- Streptokinase
- 3- Statin
- 4- Direct Thrombin inhibitor
- 5- GIIIIIA inhibitor

#### Answer & Comments

Answer: 5- GIIIIIA inhibitor

An unstable patient with coronary arterial disease can be considered for a GIIIIIA inhibitor such as tirofiban whilst awaiting coronary angiography.

Abxici-mab, another GIIIIIA inhibitor, is also frequently used prior to angioplasty.



[ Q: 2394 ] MRCPass - 2012 January

A 72 years old woman was admitted with complaints of anorexia, nausea and lethargy for last 4 months. She had history of fall 12 months back after which she sustained mild compression fracture of L1 vertebra. After the fall, she has had persistent backaches. On examination, she was pale, BP was 160/90 mmHg and bilateral pedal oedema. There was tenderness over the upper lumbar region.

Blood tests showed:

Hb 10.5 g/dl, WCC  $7 \times 10^9/l$ , platelets  $220 \times 10^9/l$ , ESR 90 mm/hr, sodium 135 mmol/l, potassium 4.2 mmol/l, urea 16 mmol/l, creatinine 240  $\mu$ mol/l, calcium 2.9 (2.25-2.7) mmol/l, phosphate 0.6 (0.8-8) pmol/l. IgA 3.2 (0.5-4.0) g/l, IgG 23 (5.0-13.0) g/l, IgM 2.3 (0.3-2.2) g/l.

Routine urine examination showed urine albumin trace, urine protein/creatinine ratio 2.7 and urinary Bence Jones protein was positive.

*What is the likely diagnosis?*

- 1- Waldenstrom's macroglobulinaemia
- 2- Multiple myeloma
- 3- Chronic myeloid leukaemia
- 4- Acute lymphocytic leukaemia
- 5- Osteoporosis

#### Answer & Comments

Answer: 2- Multiple myeloma

The presence of unexplained anemia, kidney dysfunction, a high erythrocyte sedimentation rate (ESR), hypercalcaemia and a high serum paraprotein with bence jones proteinuria suggests multiple myeloma.



[ Q: 2395 ] MRCPass - 2012 January

A 30 year old female took 40 tablets of Paracetamol and was admitted to hospital.

She is seen the following day and needs assessment of her medical condition.

*Which of the following is the best investigation to assess prognosis after 26 hours for a paracetamol overdose?*

- 1- Prothrombin time
- 2- AST
- 3- Paracetamol level
- 4- Urea and creatinine
- 5- Bilirubin

#### Answer & Comments

Answer: 1- Prothrombin time

Although all of the tests may be abnormal, the INR / prothrombin time measurement is the most important in predicting prognosis (part of the child pugh criteria for liver failure) after a paracetamol overdose.



[ Q: 2396 ] MRCPass - 2012 January

A 70 year old man presents with a

history of breathlessness.

He has a past medical history of hypertension and a myocardial infarction 5 years ago. He smokes 20 cigarettes and drinks 2 units of alcohol per day. On examination, BP was 120/70, O<sub>2</sub> sats 95% on air. Cardiovascular and respiratory examination was unremarkable.

Neurological examination revealed a right sided eye ptosis and miosis. Eye movements were normal.

*What investigation should be done to confirm the diagnosis?*

- 1- MRI of the brain
- 2- Chest X ray
- 3- ECG
- 4- Fundoscopy
- 5- CT scan of the abdomen

#### Answer & Comments

Answer: 2- Chest X ray

This patient who is a heavy smoker also has signs of horner's syndrome on the right side.

This suggests a possible Pancoast tumour of the lung. A space occupying lesion, a brain stem CVA, trauma to the neck and also Pancoasts' tumour may all cause Horner's syndrome.



[ Q: 2397 ] MRCPass - 2012 January

*Which ion / channel is primarily responsible for repolarisation phase in the cardiac cells?*

- 1- Sodium
- 2- Calcium
- 3- Phosphate
- 4- Magnesium
- 5- Potassium

#### Answer & Comments

Answer: 5- Potassium

Depolarisation and repolarisation refer to neuronal conduction or cardiac electrical activity.

The action potentials produced by depolarization (due to Na<sup>+</sup> ions moving into cell), leads to release of Ca<sup>2+</sup> ions which lead to contraction of cardiac muscle, followed by repolarization (K<sup>+</sup> ions moving into cell).



[ Q: 2398 ] MRCPass - 2012 January

A 32 year old woman has presented with recurrent sinusitis and symptoms of haemoptysis for 6 months. Urine dipstick showed blood ++ and she was noted to have renal impairment with a creatinine of 160 umol/l. A Chest XR showed upper lobe infiltrates.

Investigations showed:

urine sediment - many red blood cell and granular casts

erythrocyte sedimentation rate (ESR) was 50 mm/hr

anti-nuclear antibody (ANA) - borderline positive 1:40

anti-streptolysin O (ASO) antibody - < 1:40

c-ANCA - positive at a titer of 1:320, PR 3 positive

p - ANCA - negative

*What is a renal biopsy likely to show ?*

- 1- Crescentic glomerulonephritis
- 2- Minimal change glomerulonephritis
- 3- IgA nephropathy
- 4- Post streptococcal glomerulonephritis
- 5- Goodpasture's syndrome

#### Answer & Comments

Answer: 1- Crescentic glomerulonephritis



Crescentic glomerulonephritis, also known as Rapidly progressive glomerulonephritis (RPGN) is characterized by a rapid loss of renal function, (usually a 50% decline in the glomerular filtration rate (GFR) within 3 months) with glomerular crescent formation seen in at least 50% of glomeruli seen on kidney biopsies.

In 50% of cases, RPGN is associated with an underlying disease such as Goodpasture syndrome, systemic lupus erythematosus, or Wegener granulomatosis; the remaining cases are idiopathic. Regardless of the underlying cause, RPGN involves severe injury to the kidneys' glomeruli, with many of the glomeruli containing characteristic glomerular crescents (crescent-shaped scars).



[ Q: 2399 ] MRCPass - 2012 January

A 30 year old man has been on a recent trip on a holiday visiting his family. He has not previously been immunized with BCG. He now feels unwell with fevers and lethargy but did not have a productive cough. He also mentioned he was recently in contact with a friend who had active tuberculosis infection confirmed through positive sputum culture.

*What should be done for him now?*

- 1- Mantoux test
- 2- Quantiferon test
- 3- BCG immunisation
- 4- Isoniazid prophylaxis
- 5- Start quadruple TB therapy

#### Answer & Comments

Answer: 1- Mantoux test

As this patient has not been previously immunised, a mantoux test is helpful because it is likely to be negative if he did not have TB infection.

The Mantoux Test (MT) is a classical delayed-type hypersensitivity (DTH) response to the

intradermal injection of tuberculin purified protein derivative (PPD). If the mantoux test showed a strongly positive response then the patient is likely to have active tuberculosis and will need treatment. The best diagnostic tool in suspected pulmonary TB is sputum stain for AFB but this patient does not have a productive cough. A quantiferon test is a blood test which is helpful but can be non specific and should not be used as a primary diagnostic tool.



[ Q: 2400 ] MRCPass - 2012 January

A 55 year woman presents with a red eye on the left. It only began last night and she complained of pain and blurred vision. On examination, there was left corneal edema, and dilated pupils.

*Which one of the following is most likely?*

- 1- Central retinal vein occlusion
- 2- Closed angle glaucoma
- 3- Vitreous haemorrhage
- 4- Partial retinal detachment
- 5- Cataract

#### Answer & Comments

Answer: 2- Closed angle glaucoma

In acute closed angle glaucoma, intra-ocular pressure is increased as a result of an impairment of aqueous outflow.

The closure is due to contact of the peripheral iris with the trabecular meshwork at the entrance to Schlemm's canal.

The commonest presentation is with a red eye.



[ Q: 2401 ] MRCPass - 2012 January

A 46 year old man is known to have ulcerative colitis which was diagnosed 10 years ago. Over the last two months he has right upper quadrant discomfort and noticed

to have jaundice. He was referred to the gastroenterology outpatients for assessment. Investigations performed showed these results: Ultrasound showed a dilated intra and extrahepatic ducts with beaded appearances. Blood tests results:

ALT 120 (5-35) U/l

AST 90 (1-31) U/l

ALP 750 (20-120) U/l

Bilirubin 80 (1-22)  $\mu\text{mol/l}$

Albumin 38 (37-49) g/l

amylase 250 (60-180) U/l

*What test should be done to confirm the diagnosis?*

- 1- Chest X Ray
- 2- OGD
- 3- CT scan of abdomen
- 4- Gamma GT
- 5- Magnetic resonance cholangiopancreatography

#### Answer & Comments

Answer: 5- Magnetic resonance cholangiopancreatography

The cholestatic picture along with inflammatory lesion seen on the ultrasound hints towards either Sclerosing cholangitis or associated with ulcerative colitis.

Narrowing of the bile duct lumen usually occurs throughout the biliary tree. Less commonly, changes are confined to the intra-hepatic or extra-hepatic ducts. Primary sclerosing cholangitis is a rare disease of unknown aetiology characterised by chronic inflammation and fibrosis of the bile duct. Primary sclerosing cholangitis is associated with cholangiocarcinoma, a cancer of the biliary tree, and the lifetime risk for PSC sufferers is 10-15%. As many as 5% of patients with ulcerative colitis may progress to develop primary sclerosing cholangitis.

The diagnosis is by imaging of the bile duct, usually in the setting of endoscopic retrograde cholangiopancreatography (ERCP) which shows "beading" (both strictures and dilation) of the intrahepatic and extrahepatic bile ducts. Another option is magnetic resonance cholangiopancreatography (MRCP), where magnetic resonance imaging is used to visualise the biliary tract.



[ Q: 2402 ] MRCPass - 2012 January

A 56-year-old, unemployed, man was admitted due to confusion and disorientation with the onset of acute symptoms a few days before admission. He had a history of alcohol dependence of 20 years duration. He was awake but disorientated to person, location, situation, and time.

Temperature was 36.5°C and BP was 120/80 mmHg. Neurological examination revealed gaze-evoked nystagmus in all directions. All deep tendon reflexes were normal. The finger-nose test was ataxic. Standing and gait with open eyes evidenced a distinct ataxia with tremors of the upper extremity. The Romberg sign was positive. He had an MMSE score of 26 /30 on admission. A blood glucose measurement was 3 mmol/l.

*What should be given to treat the patient?*

- 1- 50 ml of 50% dextrose
- 2- 500 mls of 5% dextrose
- 3- Thiamine infusion
- 4- Lactulose
- 5- Chlordiazepoxide

#### Answer & Comments

Answer: 3- Thiamine infusion

This patient is exhibiting features of Wernicke's encephalopathy, which are nystagmus, ataxia and confusion.

The daily thiamine requirement for healthy individuals is between 1 and 2 mg/day but both alcohol and malnutrition may interfere with the absorption of thiamine. Thiamine dependent enzymes such as transketolase and pyruvate dehydrogenase are essential for cerebral myelination and thiamine deficiency in alcoholism leads to Wernicke's encephalopathy.

Thiamine should also be supplemented fully in malnourished alcoholics. The administration of intravenous fluids containing glucose without adequate thiamine supplementation in alcoholics could aggravate the thiamine deficiency leading to irreversible cerebral lesions.



[ Q: 2403 ] MRCPass - 2012 January

*A 30 year old man has had Hepatitis B testing. The results show :*

Anti-HBc Ab positive

Anti-Hbs Ab positive

HBs Ag negative

*Which one of the following is likely to be the correct scenario?*

- 1- Acute Hepatitis B infection
- 2- Chronic hepatitis B carrier
- 3- Previous hepatitis B immunisation
- 4- Previous hepatitis B infection but not a carrier
- 5- Not infected with hepatitis B

#### Answer & Comments

Answer: 4- Previous hepatitis B infection but not a carrier

A chronic carrier has positive Hep B s Ag and positive HepB c Ab

A patient with previous immunization has Hep B s Ag negative and negative Hep B c Ab and positive Hep B s Antibody. (note that the

core antibody is non specific and not elevated post immunisation)

A patient with previous Hep B infection who is not a chronic carrier, has negative Hep B s Ag and positive Hep B c

Antibody and positive Hep B s Antibody (both antibodies are positive)



[ Q: 2404 ] MRCPass - 2012 January

A 56-year-old woman presents with periods of sweats and tremors which are relieved by eating. She has gained approximately 6 kg in weight in the last 2 years. Her BM is 4.5. Blood tests are: Hb 13 g/dl, MCV 78 fl, WCC  $7 \times 10^9/l$ , platelets  $200 \times 10^9/l$ , sodium 135 mmol/l, potassium 4.7 mmol/l, urea 5 mmol/l, creatinine 100  $\mu\text{mol/l}$ , TSH - 3.3 (0.3-4) mU/l, free T4 -20 (10-24) pmol/l.

*What is the most appropriate investigation?*

- 1- 72 hour fast
- 2- CT scan of pancreas
- 3- MRI of the brain
- 4- Insulin C-peptide concentration
- 5- Oral glucose tolerance test

#### Answer & Comments

Answer: 1- 72 hour fast

This patient has symptoms suggestive of hypoglycaemia which are relieved by carbohydrate.

The likely cause is an insulinoma which is an insulin secreting pancreatic tumour.

The best way of confirming the diagnosis is with a 72 hour fast. During the fast, the patient with an insulinoma may get episodes of hypoglycaemia with measured inappropriately high insulin C peptide (endogenous insulin).

Measurement of C-peptide is useful in excluding factitious hypoglycaemia from self injection of insulin. Insulin preparations do not contain C-peptide.



[ Q: 2405 ] MRCPass - 2012 January

A 61-year-old man is admitted to the resuscitation room with a GCS score of 13/ 15. He has a past medical history of hypertension, glaucoma and diabetes. He had been found unconscious at home. Blood gases and blood test results taken on admission show the following:

pH 7.22

pCO<sub>2</sub>- 3.5 kPa

pO<sub>2</sub> - 13.8 kPa

Na<sup>+</sup> 140 mmol/l

K<sup>+</sup> 4.2 mmol/l

Chloride 110 (95-107) mmol/l

Bicarbonate 10 (20-28) mmol/l

Urea 2.1 mmol/l

Creatinine 79 µmol/l

Glucose 7.1 mmol/l

A day following observation in the assessment unit, he complained of visual problems.

*Which one of the following diagnoses would be most consistent with these results?*

- 1- Addisonian crisis
- 2- Pulmonary embolism
- 3- Paraquat poisoning
- 4- Methanol poisoning
- 5- Diabetic ketoacidosis

#### Answer & Comments

Answer: 4- Methanol poisoning

Methanol poisoning can cause high anion gap metabolic acidosis and also leads to formation of formic acid from methanol,

which causes retinal toxicity and visual impairment.

Methanol is a commonly used organic solvent, the ingestion of which can cause significant toxicity. It is a constituent in many commercially available industrial solvents and in poorly adulterated alcoholic beverages.



[ Q: 2406 ] MRCPass - 2012 January

A 34-year-old man who has returned from a holiday in Egypt presents with diarrhoea. For the past two days he has been passing frequent bloody diarrhoea associated with crampy abdominal pain. Abdominal examination demonstrates diffuse lower abdominal tenderness but there is no guarding or rigidity. His temperature is 37.7°C.

*What is the most likely causative organism?*

- 1- Giardiasis
- 2- Enterotoxigenic Escherichia coli
- 3- Staphylococcus aureus
- 4- Shigella
- 5- Salmonella

#### Answer & Comments

Answer: 4- Shigella

All are common causes of traveller's diarrhoea.

However, North Africa and the Middle East (in particular Egypt) were also commonly reported regions of travel for Shigella spp infections.

Some of the infectious causes of bloody diarrhoea are:

Salmonella

Shigella

Campylobacter jejuni

Yersinia enterocolitica

E. coli

Entamoeba histolytica



[ Q: 2407 ] MRCPass - 2012 January

A 60 year old man has squamous cell lung cancer and presents with shortness of breath. He has a history of ischaemic heart disease. A pleural effusion was tapped and it showed a transudate.

*Which one of the following is a contraindication towards lung resection surgery?*

- 1- FEV1 of 1.8 L
- 2- Pleural effusion
- 3- Hypercalcaemia
- 4- Superior vena cava obstruction
- 5- Ischaemic heart disease

#### Answer & Comments

Answer: 4- Superior vena cava obstruction

SVC obstruction is a contraindication.

With a pleural effusion, there should be malignant cells demonstrated on cytology to contraindicate surgery.

Contraindications for surgical resection of bronchial lung tumour:

FEV1 is less than 1 L

Mediastinal LN >1cm

Staging >IIIB (extrathoracic metastatic disease)

Nerve involvement is present (recurrent laryngeal nerve, vocal cord paralysis)

Malignant pleural effusion is present (positive cytology)

Horner's syndrome

SVC obstruction



[ Q: 2408 ] MRCPass - 2012 January

A 33 year old woman presents with tender, erythematous lesions on both legs and is offered a Mantoux test.

*Which one of the following molecules mediates the action in a Mantoux test?*

- 1- Interleukin 2
- 2- TNF alpha
- 3- HIF1 alpha
- 4- Beta interferon
- 5- CCL1

#### Answer & Comments

Answer: 2- TNF alpha

The Mantoux Test (MT) is a classical delayed-type hypersensitivity (DTH) response to the intradermal injection of tuberculin purified protein derivative (PPD).

It represents a cutaneous T cell mediated memory recall immune response.

The presence of IL-1 alpha, IL-1 beta, IL-6, interferon-gamma (IFN-gamma) and tumour necrosis factor-alpha (TNF-alpha) are found in the skin of tuberculin-purified protein derivative (PPD)-induced reactions.



[ Q: 2409 ] MRCPass - 2012 January

A 70-year-old man with multiple myeloma presented with sudden onset gross hematuria to hospital. He had recently been on chemotherapy and treatment with prednisolone, cyclophosphamide and zoledronic acid. He also has a history of rheumatoid arthritis and hypertension.

*Which of the following is the likely cause of haematuria?*

- 1- Bendroflumethiazide
- 2- Prednisolone
- 3- Cyclophosphamide
- 4- Zoledronic acid

## 5- Infliximab

## Answer &amp; Comments

Answer: 3- Cyclophosphamide

High dose cyclophosphamide is associated with haemorrhagic cystitis (severe haematuria and bladder pains).

Discontinuation of the drug and analgesics are essential.



[ Q: 2410 ] MRCPass - 2012 January

A 32 year old man presents with cough and purulent sputum.

He has had several friends with similar symptoms.

On examinations, there were crepitations in the left base of the lungs. Chest X ray shows patchy left lung shadow s. Investigations show :

Hb 10.5 g/dl

WCC  $13 \times 10^9/l$

platelets  $270 \times 10^9/l$ ,

Neutrophil  $9 (2 \text{ to } 7.5) \times 10^9/l$ ,

Reticulocyte count  $5 (0.5-1.5) \%$

*Which one of the following is the most likely causative organism?*

- 1- Legionella
- 2- Staph aureus
- 3- Streptococcus pyogenes
- 4- Mycoplasma
- 5- Pneumocystis

## Answer &amp; Comments

Answer: 4- Mycoplasma

There is likely to be cold agglutinins associated with mycoplasma infection.

Transient acute hemolysis (reticulocytes) may occur secondary to certain infectious

diseases, such as Mycoplasma pneumoniae infection and infectious mononucleosis (eg, EBV) infections.



[ Q: 2411 ] MRCPass - 2012 January

A 37-year-old woman presented with a 2-year history of progressive dysphagia to both solids and liquids, as well as a 5 kg weight loss. She typically complained of heartburn especially when lying down and after food. A chest X ray showed dilatation of the oesophagus with a fluid level.

*What is the most likely diagnosis?*

- 1- Oesophageal diverticulum
- 2- Pancreatic malignancy
- 3- Achalasia
- 4- Gastroduodenal ulcer
- 5- Zollinger Ellison syndrome

## Answer &amp; Comments

Answer: 3- Achalasia

Achalasia is characterized by difficulty swallowing, regurgitation, and sometimes chest pain.

The lower esophageal sphincter fails to relax, leading to dilatation of the oesophagus. On a barium swallow, this leads to a bird's beak appearance.



[ Q: 2412 ] MRCPass - 2012 January

An 18-year-old man presented casualty complaining of difficulty breathing. He had brought hospital by ambulance, having collapsed shortly after being stung on hand by a bee. On examination, his blood pressure was 80/40 mmHg, facial swelling and pharyngeal oedema was noted.

*Which one of following investigations likely confirm anaphylaxis?*

- 1- Haemolytic complement (CH50) level
- 2- Plasma tryptase activity



- 3- Complement C3 level
- 4- Total IgE level
- 5- Eosinophil count

#### Answer & Comments

**Answer:** 2- Plasma tryptase activity

The reaction involves preferential production of IgE, in response certain antigens, which in turn initiates a sequence of events leading to mast cell activation.

According to the Resuscitation council guidelines, the specific test to help confirm a diagnosis of an anaphylactic reaction is measurement of mast cell tryptase.

Tryptase is the major protein component of mast cell secretory granules. In anaphylaxis, mast cell degranulation leads to markedly increased blood tryptase concentrations (Figure 4). Tryptase levels are useful in the follow-up of suspected anaphylactic reactions, not in the initial recognition and treatment: measuring tryptase levels must not delay initial resuscitation. Tryptase concentrations in the blood may not increase significantly until 30 minutes or more after the onset of symptoms, and peak 1-2 hours after onset.

The half-life of tryptase is short (approximately 2 hours), and concentrations may be back to normal within 6-8 hours, so timing of any blood samples is very important.

<http://www.resus.org.uk/pages/reaction.pdf>



[ Q: 2413 ] MRCPass - 2012 January

A 50-year-old man presented with an initial complaint of dyspnea on exertion that had developed five years prior and had progressed to shortness of breath while walking up one flight of stairs. He smokes 20 cigarettes and drinks 2 units of alcohol per day.

Physical examination revealed mild wheezes on auscultation. The remainder of his physical examination was unremarkable. A chest x ray showed hyperinflated lungs with large bullae.

Pulmonary function testing at presentation demonstrated :

forced expiratory volume in one second (FEV1) was 2.10 litres (61% of the predicted value)

forced vital capacity (FVC) was 3.60 litres (81% of the predicted value)

the FEV1:FVC ratio was 0.59

total lung capacity (TLC) was 6.40 litres (93% of the predicted value)

residual lung volume (RV) was 2.91 litres (123% of the predicted value)

There was minimal response to an inhaled bronchodilator.

*What is the likely diagnosis?*

- 1- Asthma
- 2- Bronchiectasis
- 3- Emphysema
- 4- Silicosis
- 5- Usual interstitial pneumonitis

#### Answer & Comments

**Answer:** 3- Emphysema

There is evidence of obstructive picture (reduced FEV1/FVC ratio) and hyperinflation on lung function tests.

This is in keeping with smoking related emphysema of the lungs.



[ Q: 2414 ] MRCPass - 2012 January

A 69-year-old man was admitted for evaluation of a new blistering rash. He has a history of hypertension and epilepsy. He normally takes bendroflumethiazide and phenytoin. On the day of admission, complained of soreness in his mouth and that

his hands were sore. His conjunctivae were mildly erythematous, and both upper eyelids had superficial erosions. His oral cavity revealed multiple shallow, 3 mm erosions with hemorrhagic crusting extending from the lips to the soft palate. His right chest revealed a 3 cm full-thickness erosion. Both palms had full-thickness, necrotic erosions with surrounding, partially blanching erythema of the digits. The soles of both feet were erythematous.

*What is the likely diagnosis?*

- 1- Toxic epidermal necrolysis
- 2- Erythrodermic psoriasis
- 3- Eczema herpeticum
- 4- Bullous pemphigoid
- 5- Erythema multiforme

#### Answer & Comments

Answer: 1- Toxic epidermal necrolysis

Toxic epidermal necrolysis (TEN) is a potentially life-threatening dermatologic disorder characterized by widespread erythema, necrosis, and bullous detachment of the epidermis and mucous membranes, resulting in exfoliation and possible sepsis and/or death (see the image below).

Mucous membrane involvement can result in gastrointestinal hemorrhage, respiratory failure, ocular abnormalities, and genitourinary complications.

TEN is most commonly drug induced. However, the disorder has other potential etiologies, including infection, malignancy, and vaccinations. Antibiotics such as macrolides and sulphonamides are associated. Anticonvulsants such as phenytoin and carbamazepine are also associated. TEN in patients taking anticonvulsants has most often been reported within 2 months of starting the drug.



[ Q: 2415 ] MRCPass - 2012 January

A 21-year-old man presents with lethargy, pyrexia and headaches. These symptoms have been present for the past 8 days. He had not been unwell before and there is no recent history of travel. Clinical examination reveals a temperature of 37.9°C, marked cervical lymphadenopathy and mild hepatomegaly. Throat examination reveals two small erythematous areas. A full blood count result shows:

Hb 13.1 g/dl

Platelets  $225 \times 10^9/l$

WCC  $17.1 \times 10^9/l$

Neut  $5.2 \times 10^9/l$

Lymph  $11.2 \times 10^9/l$

Blood Film Atypical lymphocytes seen

*What is the most likely diagnosis?*

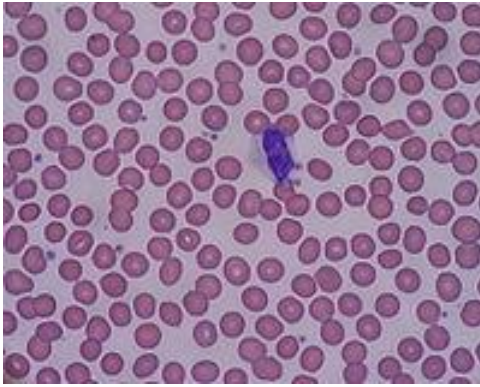
- 1- Acute lymphoblastic leukaemia
- 2- Hashimoto's thyroiditis
- 3- Infectious mononucleosis
- 4- HIV seroconversion
- 5- Septicaemia secondary to streptococcal throat infection

#### Answer & Comments

Answer: 3- Infectious mononucleosis

The history of previously being well, acute deterioration with lymphadenopathy, throat involvement and atypical lymphocytes on blood film are all consistent with Epstein Barr virus infection (glandular fever or infectious mononucleosis).

Atypical lymphocytes are commonly associated with EBV, CMV and toxoplasma infection.



Reactive lymphocytes are lymphocytes that become large as a result of antigen stimulation.



[ Q: 2416 ] MRCPass - 2012 January

A 35 year old man has been investigated for liver cirrhosis and been diagnosed as having Wilson's disease.

His wife has had no symptoms but knows that there is a single copy of the gene is present in 1 in 100 people. He asks what is the chance that his children might have Wilson's disease.

*What is the risk of each child having the disease?*

- 1- None
- 2- 1 in 50
- 3- 1 in 100
- 4- 1 in 200
- 5- 1 in 1000

#### Answer & Comments

Answer: 4- 1 in 200

Wilson's disease is inherited in an autosomal recessive pattern.

A single abnormal copy of the gene is present in 1 in 100 people. In this case since the man already has both copies of the gene and the wife has a 1 in 100 chance of being a carrier, thus each child will have half the risk because if the wife was a carrier she has one normal and one gene for Wilson's disease. Half of 1 in 100 chance is 1 in 200.



[ Q: 2417 ] MRCPass - 2012 January

In a dehydrated patient, compensatory water retention takes place. Despite this, *in which part of the nephron does water absorption not take place?*

- 1- Proximal convoluted tubule
- 2- Descending limb Loop of Henle
- 3- Ascending limb Loop of Henle
- 4- Distal convoluted tubule
- 5- Collecting duct

#### Answer & Comments

Answer: 3- Ascending limb Loop of Henle

Unlike the descending limb, the ascending limb of Henle's loop is impermeable to water, a critical feature of the countercurrent exchange mechanism employed by the loop.

The ascending limb actively pumps sodium out of the filtrate, generating the hypertonic interstitium that drives countercurrent exchange. Though the collecting duct is normally impermeable to water, it becomes permeable under the actions of antidiuretic hormone (ADH). As much as three-fourths of the water from urine can be reabsorbed as it leaves the collecting duct by osmosis.



[ Q: 2418 ] MRCPass - 2012 January

A 20 year old female is referred to the hospital. Her family are concerned about her because she has been very agitated in the last 2 days. She has no past medical history of note. On examination, she looks restless and has significantly dilated pupils.

*What is the likely cause of mydriasis?*

- 1- Alcohol
- 2- Barbiturates
- 3- Diazepam
- 4- Cocaine
- 5- Opiates

## Answer &amp; Comments

Answer: 4- Cocaine

This patient is likely to have taken a stimulant which has made her restless and agitated.

The most common stimulants taken as recreational drugs are amphetamines and cocaine. They also often cause dilated pupils (mydriasis).



[ Q: 2419 ] MRCPass - 2012 January

A 63-year-old man is examined in the cardiology clinic. During cardiac examination it is noted that the pulmonary component of the second heart sound occurs before the aortic component.

*Which one of the following is associated with this finding?*

- 1- Pulmonary stenosis
- 2- Left bundle branch block
- 3- Right bundle branch block
- 4- Atrial septal defect
- 5- Deep inspiration

## Answer &amp; Comments

Answer: 2- Left bundle branch block

This patient has reversed splitting of the second heart sound.

LBBB and left heart strain in HCM and aortic stenosis can cause reversal of A2P2 second heart sounds. Also, in type B wolf parkinson white syndrome, early activation of the right ventricle through an accessory pathway can cause P2 to close prematurely. Patent ductus arteriosus is another cause.



[ Q: 2420 ] MRCPass - 2012 January

A 40-year-old woman has presented with an erythematous annular patch with central clearing on her left foot.

She likes walking and has been hiking on hills recently. The patient mentioned that the rash has gotten progressively larger and spreading up the leg over the last 3 weeks and she has had a recent onset of intermittent joint pains. On examination, there is a large area of erythema with a central clearing over the left leg.

*What is the likely diagnosis?*

- 1- Staphylococcal infection
- 2- Lyme disease
- 3- Pastereulla infection
- 4- Necrotising fasciitis
- 5- Gonorrhoea

## Answer &amp; Comments

Answer: 2- Lyme disease

Lyme Disease (LD) is a multisystem disease affecting the nervous system, skin, joints, and heart.

Erythema migrans (EM), the characteristic dermatologic lesion of LD, is an expanding red papule or macule with central clearing, often found in the axilla, midriff, or popliteal areas.

*B. burgdorferi* is transmitted by the tick *Ixodes*, a hard bodied tick found in wooded areas. Lyme disease occurs in 3 stages: early localized, early disseminated, and late. If left untreated, each stage progresses to the next. Early localized disease manifests within 3-30 days presenting with erythema migrans (EM), myalgia, fatigue, headache, fever, lymphadenopathy, and arthralgia. Early disseminated disease occurs 30 to 120 days post-infection and is characterized by EM (single or multiple), fatigue, lymphadenopathy, conjunctivitis, neck pain, cardiac abnormalities, radiculoneuritis, arthritis, and CNS manifestations. Late disease manifests from 4 months to 1 year, presenting with fatigue, chronic arthritis, CNS manifestations, and encephalopathy.

First-line treatment for early disease is doxycycline (100 mg PO twice a day for 14 to 21 days) or amoxicillin (500 mg PO three times a day for 14 to 21 days).



[ Q: 2421 ] MRCPass - 2012 January

*With which one of the following carcinomas, is the RET oncogene associated ?*

- 1- Anaplastic thyroid carcinoma
- 2- Follicular thyroid carcinoma
- 3- Papillary thyroid carcinoma
- 4- Medullary thyroid carcinoma
- 5- Parathyroid carcinoma

#### Answer & Comments

Answer: 4- Medullary thyroid carcinoma

The RET proto-oncogene encodes a receptor tyrosine kinase.

RET dysfunction mutations are associated with the development of medullar thyroid carcinoma and multiple endocrine neoplasias type II and III (formerly types 2A and 2B) and Hirschsprung's disease.



[ Q: 2422 ] MRCPass - 2012 January

A 39-year-old male was admitted hospital with a two week history of cough and diarrhoea. He has a history of recurrent respiratory infections, otitis media, and sinusitis starting from adolescence. He also had a severe episode of meningoencephalitis and inguinal abscesses. A chest X ray showed patchy consolidation and he went to have a CT scan of the chest which showed bilateral changes consistent with bronchiectasis.

Blood test results are:

Hb 12.5 g/dl

MCV 75 fl

WCC  $6 \times 10^9/l$

platelets  $180 \times 10^9/l$

sodium 135 mmol/l

potassium 4.5 mmol/l

urea 5 mmol/l

creatinine 90  $\mu$ mol/l

IgA 0.2(0.5-4.0) g/l

IgG 0.35 (5.0-13.0) g/l

IgM 0.2 (0.3-2.2) g/l

*What is the diagnosis?*

- 1- Cystic fibrosis
- 2- Kartagener's syndrome
- 3- HIV infection
- 4- Common variable immunodeficiency
- 5- Tuberculosis infection

#### Answer & Comments

Answer: 4- Common variable immunodeficiency

Common variable immunodeficiency (CVID) is a group of approximately 150 primary immunodeficiencies which have a common set of features (including hypogammaglobulinemia) but which have different underlying causes.

Recurring infections involving the ears, eyes, sinuses, nose, bronchi, lungs, skin, GI tract, joints, bones, CNS, parotid glands are a feature.

Another feature is hypogammaglobulinaemia with low levels of IgA, IgG and IgM.



[ Q: 2423 ] MRCPass - 2012 January

A study was conducted to investigate the effect of a new antiplatelet drug. It compared the number of survivors of myocardial infarction with those who died after a 2 year period of being on the drug versus a placebo.

*Which one of the following tests is best used to compare the effects of the drug on survival?*



- 1- Mann Whitney test
- 2- Logistic regression analysis
- 3- Spearmann's correlation
- 4- Chi square test
- 5- Kaplan Meier curve

#### Answer & Comments

Answer: 4- Chi square test

The chi square test is most appropriate here for comparing drug treatment and placebo groups and survival.

Survived Not Survived

With Drug A B

Without Drug C D



[ Q: 2424 ] MRCPass - 2012 January

A 75 year man was found collapsed at home and brought to the emergency department.

He has a past history of coronary artery bypass grafting, stroke and diabetes. He was unable to give a history. On examination, he was covered with multiple bruises. A dipstick urine analysis shows Blood +++, protein +, glucose -ve.

Some of his investigation results are listed below:

sodium 135 mmol/l

potassium 4.5 mmol/l

urea 5 mmol/l

creatinine 300 µmol/l

AST 320 (1-31) U/l

*What likely cause of the raised serum creatinine concentration?*

- 1- Urinary tract infection
- 2- Glomerulonephritis
- 3- Nephrotic syndrome
- 4- Nephritic syndrome

- 5- Myoglobinuria

#### Answer & Comments

Answer: 5- Myoglobinuria

The elevated serum creatinine likely to be due to rhabdomyolysis.

The positive urinalysis is caused by myoglobin a muscle protein released during muscle damage. High amounts of myoglobin damages the renal tubules which then leads to acute kidney injury.



[ Q: 2425 ] MRCPass - 2012 January

A 29 year old man presented to the emergency department with a severe exacerbation of asthma. He responded poorly to aggressive therapy with systemic corticosteroids (prednisolone 40 mg) 100% oxygen and continuous inhaled beta agonist/anticholinergic therapy. He had a history of poorly controlled asthma, for which he had been hospitalized six months ago. He is drowsy, confused and lethargic. His PCO<sub>2</sub> 8 kPa and his SaO<sub>2</sub> (oxygen saturation) has fallen to 85%, despite the oxygen therapy.

*Which one of the following is an indication for intubation?*

- 1- Not completing sentences
- 2- Using accessory muscles
- 3- Elevated CO<sub>2</sub> levels
- 4- Wheezing in the chest
- 5- Pneumothorax

#### Answer & Comments

Answer: 3- Elevated CO<sub>2</sub> levels

Asthmatic patients who respond poorly to aggressive, inhaled bronchodilator therapy and intravenous steroids should be carefully monitored for progressive type II respiratory failure.



A sign of type II respiratory failure in asthma patients who are young and otherwise healthy is a normal or increasing partial pressure of carbon dioxide (PCO<sub>2</sub>).

It is an indication for intubation.



[ Q: 2426 ] MRCPass - 2012 January

A 68-year-old woman presents with a vesicular rash in the trigeminal distribution on the left side of her face. This was diagnosed as herpes zoster infection and she recovered. Several weeks following the episode, she describes having severe pains several episodes a day which, each lasting for several minutes up to 2 hours.

The drug did not respond to nonsteroidal anti inflammatory drugs and paracetamol.

*What drug should be commenced?*

- 1- Oramorph
- 2- Sodium valproate
- 3- Carbamazepine
- 4- Phenytoin
- 5- Tramadol

#### Answer & Comments

Answer: 3- Carbamazepine

The clinical history is typical for post herpetic neuralgia.

Neuropathic agents such as carbamazepine and gabapentin are recommended for its treatment.



[ Q: 2427 ] MRCPass - 2012 January

A 66-year-old woman comes to the clinic for a review of symptoms. Over the past three months she has been complaining of fatigue and a full blood count was requested:

Hb 8.4 g/dl

MCV 69 fl

Plt 362 x 10<sup>9</sup>/l

WBC 5.0 x10<sup>9</sup>/l

Blood film Hypochromic, microcytic picture

An upper GI endoscopy was reported as normal.

*What is the most appropriate next investigation?*

- 1- Barium swallow
- 2- Faecal occult blood
- 3- Colonoscopy
- 4- Schilling test
- 5- Reticulocyte count

#### Answer & Comments

Answer: 3- Colonoscopy

There is evidence of iron deficiency anaemia.

Although the OGD is normal, a colonoscopy should be considered to exclude sources of bleeding e.g. angiodysplasia or colorectal cancer



[ Q: 2428 ] MRCPass - 2012 January

A 40 year old man has a tetanus injection at the GP surgery. 3 hours following this he presents unwell to A&E.

His blood pressure was 75/50 mmHg, he has a pulse rate of 115 and O<sub>2</sub> saturation of 98% on air. There was erythema around the site of the tetanus injection on his arm.

*Which type of hypersensitive reaction is this?*

- 1- Type 1
- 2- Type 2
- 3- Type 3
- 4- Type 4
- 5- Type 5

#### Answer & Comments

Answer: 1- Type 1

This is an allergic or anaphylactic reaction due to the hypotension and erythema.

Classifications for hypersensitivity are:

Type 1 : allergy - asthma, anaphylaxis

Type 2: cytotoxic - autoimmune haemolytic anaemia, goodpasture's syndrome

Type 3: immune complex - SLE

Type 4: delayed hypersensitivity - Mantoux test, multiple sclerosis

Type 5: autoimmune - Grave's disease, myasthenia gravis



[ Q: 2429 ] MRCPass - 2012 January

A 30 year old woman has just returned from south east asia and was bitten by mosquitoes. She has a fever and a malarial film is positive. She was given a course of chloroquine and primaquine.

Why is primaquine used?

- 1- To reduce multiplication of parasites in blood stream
- 2- To eradicate hepatic forms of parasite
- 3- To reduce reaction to chloroquine
- 4- To prevent repeat infection
- 5- To treat falciparum malaria

#### Answer & Comments

Answer: 2- To eradicate hepatic forms of parasite

Primaquine (or primaquine phosphate) is a medication used to treat the P. vivax or P. ovale malaria. Once the parasite has been eliminated from the bloodstream, the remaining hypnozoites must be removed from the liver and this is done by administering a 14 day course of primaquine. This process is called a radical cure.



[ Q: 2430 ] MRCPass - 2012 January

A 75 year old patient presents with dizziness and an episode of collapse. The ECG on admission shows complete heart block. The patient has a single lead pacemaker inserted.

*What anatomical site should the pacemaker wire tip be inserted?*

- 1- Right atrium
- 2- Right ventricular apex
- 3- Left ventricular apex
- 4- Coronary sinus
- 5- Atrioventricular node

#### Answer & Comments

Answer: 2- Right ventricular apex

The most basic form of a pacemaker is a VVI pacemaker where the tip of the pacemaker lead is inserted through the superior vena cava then through the tricuspid valve and into the right ventricular apex.

This is also the case where a temporary wire which needs to be inserted such that the tip sits in the right ventricular apex.



[ Q: 2431 ] MRCPass - 2012 January

A 70 year old lady has longstanding lethargy. On physical examination she had a plethoric face & conjunctival injection. Investigations revealed:

hemoglobin 18.5 g/dl (12-16 g/dl)

red cell count 8.1 M/?l (3.5 to 6 M/?l)

Hct. 58.% (37 to 52%)

MCV 65.7fL (67 to 96 fL)

MCH 19.6 pg (27 to 32 pg)

Platelet 720 (150-400) x 10<sup>9</sup>/l WBC 13.1 x 10<sup>9</sup>/l

ESR 2 mm/hour

Blood film showed erythrocytosis, thrombocytosis and leucocytosis.

*With the diagnosis in mind, which drug should be commenced?*

- 1- Clopidogrel
- 2- Bortezomib
- 3- Infliximab
- 4- Cyclosporin
- 5- Hydroxycarbamide

#### Answer & Comments

**Answer:** 5- Hydroxycarbamide

The diagnosis in this case is polycythaemia rubra vera.

Janus kinase 2 (commonly called JAK2) is a human protein that has been implicated in signaling by members of the type II cytokine receptor family. These mutations have been associated with polycythemia vera, essential thrombocythemia, and other myeloproliferative disorders.

Low dose aspirin is indicated if there are no contraindications.

Short, intermittent courses of cytoreductive therapy be administered to patients who have had thrombotic episodes or in whom platelet count continues to rise despite repeated phlebotomy.

Interferon is first-line cytoreductive therapy in the younger patients (< 40 years old).

Hydroxycarbamide is used as first line cytoreductive therapy in patients 40-75 years old.

Anagrelide is a second line cytoreductive therapy in these age groups.



[ Q: 2432 ] MRCPass - 2012 January

A 44-year-old male developed neck pain which had worsened over several years. He presented to a rheumatologist with

weight loss, back pain and stiffness. Clinical examination showed very restricted neck movement and chest expansion with no lumbar spinal movement. X rays of the patient's spine were performed.

*What feature would be expected on the x rays in ankylosing spondylitis?*

- 1- Osteosclerosis
- 2- Syndesmophyte
- 3- Lytic lesions
- 4- Osteophyte
- 5- Wedge shaped lesions

#### Answer & Comments

**Answer:** 2- Syndesmophyte

Typical X ray changes of ankylosing spondylitis are the visible formation of syndesmophytes (bony growth originating inside a ligament) and abnormal bone outgrowths similar to osteophytes affecting the spine.

These changes lead to an appearance of 'bamboo spine'.



Syndesmophyte



[ Q: 2433 ] MRCPass - 2012 January

An 80 year old woman is brought in after being found collapsed. She had not been seen by her neighbor overnight and may have been on the floor for many hours. Her temperature on admission was 33 C.

*Which feature may be a sign of hypothermia on the ECG?*

- 1- Short PR interval
- 2- Right axis deviation
- 3- Tented T waves
- 4- Reversed Tick sign
- 5- Prolonged QT

#### Answer & Comments

Answer: 5- Prolonged QT

The following are characteristic of the ECG changes in the hypothermic patient:

- atrial fibrillation
- J-waves - which are pathognomonic of hypothermia
- PR elongation
- QRS widening
- QT elongation



[ Q: 2434 ] MRCPass - 2012 January

A 41-year-old man with a history of bipolar disorder is admitted with acute confusion.

Whilst being transferred to hospital he had generalised seizure which terminated spontaneously after around 30 seconds. On arrival in the Emergency Department his GCS is 14/2/15 and he is noted to have a generalised tremor. A diagnosis of lithium toxicity is suspected. Intravenous access is obtained, bloods are taken and a saline infusion is started. Blood results reveal the following:

Lithium level 6.5 mmol/l (0.4 to 1.0) mmol/L  
 Na+ 136 mmol/l  
 K+ 4.6 mmol/l  
 Urea 6.1 mmol/l  
 Creatinine 92 µmol/l  
 Bicarbonate 25 mmol/l

*What is the most appropriate management?*

- 1- Intravenous magnesium
- 2- Intravenous bicarbonate
- 3- Intravenous normal saline
- 4- Arrange for haemodialysis
- 5- Arrange for plasma exchange

#### Answer & Comments

Answer: 4- Arrange for haemodialysis

The high lithium level and reduced GCS are an indication for haemodialysis in this patient.

Haemodialysis should be considered in any cases of lithium level > 4 mmol/l.



[ Q: 2435 ] MRCPass - 2012 January

A 35-year old woman complained of visual symptoms and presents for assessment. She complained of pain, reduced visual acuity, visual disturbance and blurred vision in the left eye. Her left visual acuity was 6/20. Light reflex in the left eye was reduced. The relative afferent pupillary defect (RAPD) was positive in the left eye where a central scotoma was present. Fundoscopy revealed a pale disc on the left retina.

*What is the clinical diagnosis?*

- 1- Retinitis pigmentosa
- 2- 3rd nerve palsy
- 3- Optic neuritis
- 4- Acute glaucoma
- 5- Retinal artery thrombosis

## Answer &amp; Comments

**Answer:** 3- Optic neuritis

The afferent pupillary defect suggest that the left eye optic nerve is affected, and a central scotoma suggests optic neuritis.

Common clinical features of optic neuritis are variable loss of central vision which usually recovers within 2-6 weeks and dull aching pain in the region of the eye. The visual field defect is most commonly a central scotoma.

There may be loss of colour vision and relative afferent pupillary defect. Multiple sclerosis is the most common cause of optic neuritis accounting for 50% of cases. Other causes include toxic amblyopia, toxoplasmosis, diabetes, syphilis, herpes zoster and infectious mononucleosis.



[ Q: 2436 ] MRCPass - 2012 January

A 62-year-old woman is investigated for weight loss, fatigue and anaemia. She has no past medical history of note. Clinical examination reveals splenomegaly associated with pallor. A full blood count is reported as follows:

Hb 9.8 g/dl

Platelets  $380 \times 10^9/l$

WCC  $120 \times 10^9/l$

Blood film. Demonstrates left shift with predominating myelocytes. Low percentage of blast cells

**What is the most appropriate treatment?**

- 1- Chlorambucil
- 2- Imatinib
- 3- Thalidomide
- 4- Rituximab
- 5- Hydroxycarbamide

## Answer &amp; Comments

**Answer:** 2- Imatinib

The diagnosis here is chronic myeloid leukaemia, which accounts for 20% of all leukaemias.

It occurs mainly in middle aged and elderly people and is characterised by marked leucocytosis, a left shifted myeloid series and in 95% of patients, the Philadelphia chromosome.

Imatinib is recommended as first-line treatment for people with Philadelphia-chromosome-positive chronic myeloid leukaemia (CML) in the chronic phase. With disease progression and palliative situations, Imatinib is used in combination with recombinant alpha interferon, hydroxyurea and busulphan.



[ Q: 2437 ] MRCPass - 2012 January

A 71-year-old woman presented to the emergency room with an acute history of progressive exertional chest pain. The pain was sharp and was associated with shortness of breath. Physical activity made it worse and improvement was noted with sublingual nitroglycerin. On arrival to the department her blood pressure was 105/62 mmHg, pulse was 98 beats per minute. Cardiac examination revealed a regular heart with no murmur, rubs or gallop. The ECG showed sinus rhythm with low voltage, left axis deviation with ST, lateral T wave abnormalities and elevated cardiac enzymes. Her Troponin T levels peaked at 5ng/ml ( $< 0.10\text{ng/ml}$ ). The following day, her chest pains subsided but she developed fevers, myalgia and a mottled discoloration of both her legs.

**What other finding is likely?**

- 1- Anaemia
- 2- Polycythaemia
- 3- Thrombocytopenia
- 4- Eosinophilia
- 5- Haemolysis

## Answer &amp; Comments

**Answer:** 4- Eosinophilia

This patient had a myocardial infarction and has developed cholesterol emboli probably due to severe atherosclerosis of the aorta.

The symptoms experienced in cholesterol embolism are fever, muscle ache and weight loss. Embolism to the legs causes a mottled appearance and purple discoloration of the toes, small infarcts and areas of gangrene due to tissue death that usually appear black, and areas of the skin that assume a marbled pattern known as livedo reticularis. The full blood count may show particularly high numbers eosinophils (more than  $0.5 \times 10^9/l$ ); this occurs in 60-80% of cases.



[ Q: 2438 ] MRCPass - 2012 January

A 70-year-old man presented to the hospital with sudden onset of double vision and a 1 month history of chronic headache. On examination, he had a left sided 3rd nerve palsy and a dilated pupil. His blood tests show no abnormality. Magnetic resonance imaging was organised.

**What is this likely to show?**

- 1- Encephalitis
- 2- Meningioma in the frontal lobe
- 3- Brainstem glioma
- 4- Posterior communicating artery aneurysm
- 5- Occipital territory infarct

## Answer &amp; Comments

**Answer:** 4- Posterior communicating artery aneurysm

Compression of the oculomotor nerve resulting in third nerve palsy is most commonly caused by posterior communicating artery aneurysm.

In these cases, third nerve palsy typically develops in response to direct pressure

on the oculomotor nerve or ischemia.



[ Q: 2439 ] MRCPass - 2012 January

A 46 year old lady presented to her physician with complaints of weakness and headaches for several months.

At presentation, she was found to have severe hypertension with blood pressure 180/110 mmHg. Her blood test results are:

sodium 149 mmol/l

potassium 2.9 mmol/l

urea 7 mmol/l

creatinine 100  $\mu$ mol/l

**What test should be done next?**

- 1- Thyroid function test
- 2- Renin:aldosterone ratio
- 3- Abdominal MRI
- 4- Intrapetrosal venous sampling
- 5- 24 hour urine for catecholamines

## Answer &amp; Comments

**Answer:** 2- Renin:aldosterone ratio

The clinical diagnosis for this case is Conn's syndrome.

Conn syndrome is characterized by increased aldosterone secretion from the adrenal glands, suppressed plasma renin activity (PRA), hypertension, and hypokalemia as seen in the above case. Routine laboratory studies can show hypernatremia, hypokalemia, and metabolic alkalosis resulting from the action of aldosterone on the distal tubule of the kidney. Renin:aldosterone ratio is a good screening test for the patient. If this suggested Conn's syndrome, then an abdominal MRI to identify an adrenal lesion should be done.



[ Q: 2440 ] MRCPass - 2012 January

A 30-year-old woman with a history



of migraine for 2 years presented to the emergency ward with complaints of visual disturbances. She had noted an increase in frequency of headache over the past few months. The patient's past medical history was unremarkable. She was taking NSAIDs for headaches. She was a non-smoker.

On physical examination, the patient's blood pressure level was 120/70 mm Hg. On neurological examination, there was no focal limb weakness and mental test function was normal. She had a bilateral homonymous superior quadrantanopia.

*What is the most likely cause?*

- 1- Craniopharyngioma
- 2- Pituitary macroadenoma
- 3- Sagittal meningioma
- 4- Glioma
- 5- Subdural haematoma

#### Answer & Comments

Answer: 2- Pituitary macroadenoma

Pituitary tumours often enlarge upwards, hence compressing the optic chiasm.

the visual field defect will first appear as bitemporal superior quadrantanopia and eventually leading to bitemporal hemianopia.

If originating superior to the optic chiasm, more commonly in a craniopharyngioma of the pituitary stalk, the visual field defect will first appear as bitemporal inferior quadrantanopia.



[ Q: 2441 ] MRCPass - 2012 January

A 53-year-old woman presented to the emergency department with complaints of intermittent fatigue, nausea and itching for several months. She complains of having a constant dry mouth. She had a past medical history of hypothyroidism. She had a 20 pack-year smoking history and alcohol intake consisted of a maximum of 4 units a day. On

examination, she was jaundiced and had palpable hepatomegaly. She was noted to have excoriation marks on the skin and xerostomia.

Blood results are: Hb 12.5 g/dl, WCC  $7 \times 10^9/l$ , platelets  $235 \times 10^9/l$ , sodium 136 mmol/l, potassium 4.5 mmol/l, urea 6 mmol/l, creatinine 110  $\mu\text{mol/l}$ , ALT 90 (5-35) U/l, AST 68 (1-31) U/l, ALP 650 (20-120) U/l, GGT 90 (4-35) U/l, Bilirubin 125 (1-22)  $\mu\text{mol/l}$ , Albumin 38 (37-49) g/l.

*What test should be sent to help confirm the diagnosis?*

- 1- Antinuclear antibody
- 2- Anti parietal cell antibody
- 3- Anti gliadin antibody
- 4- Anti smooth muscle antibody
- 5- Anti mitochondrial antibody

#### Answer & Comments

Answer: 5- Anti mitochondrial antibody

The patient has a cholestatic picture (high alkaline phosphatase and bilirubin) in the liver function tests, and hence out of all the options, primary biliary cirrhosis is most likely.

Antimitochondrial antibody is often positive. Fatigue is the first reported symptom, pruritus is also a common symptom. Examination findings usually include hepatomegaly and xanthelasmata.



[ Q: 2442 ] MRCPass - 2012 January

A 26-year-old man presented to the hospital with swelling of his hands and feet, progressive dyspnoea and weight gain in excess of 10 kg in the week prior to admission. On examination he had a blood pressure of 180/80 mmHg, heart rate of 90 and respiratory rate of 16/min. There were no skin lesions or lymphadenopathy, and all pulses were palpable. There was 3+ pitting

pedal oedema to the upper thighs and periorbital oedema. Urine dipstick showed proteinuria 4+.

A percutaneous renal biopsy showed many glomeruli with normal appearance. Electron microscopy showed areas of visceral epithelial podocyte effacement and fusion without evidence of immune deposits, and minimal change glomerulonephritis is diagnosed.

*What treatment is most likely to reduce proteinuria?*

- 1- Cyclophosphamide
- 2- Aciclovir
- 3- Lisinopril
- 4- Prednisolone
- 5- Intravenous immunoglobulin

#### Answer & Comments

Answer: 4- Prednisolone

The patient has minimal change disease (MCD).

It is postulated that MCD is a disorder of T cells, which release a cytokine that injures the glomerular epithelial foot processes. Oedema, hypertension and proteinuria are common presentations. The renal biopsy often shows normal appearances but on electron microscopy, there is diffuse loss of visceral epithelial cells (podocyte) foot processes.

Corticosteroids are the treatment of choice, leading to complete remission of proteinuria in most cases.

Approximately 90% of children respond within 2 weeks to prednisone at a dose of 60 mg/msq/d. Adults respond more slowly than children. A response in up to 80-90% has been recorded in adolescents and adults. However, the time to remission is up to 16 weeks. If patients are steroid-resistant or they relapse frequently, a trial of

immunosuppressants is given. The choice of immunosuppressants includes cyclophosphamide and chlorambucil.

Angiotensin converting enzyme inhibitors and angiotensin II receptor blockers, alone or in combination should be used with a goal of reducing the proteinuria. Blood pressure and renal function should be monitored closely in patients on angiotensin converting enzyme inhibitors and angiotensin II receptor blockers.



[ Q: 2443 ] MRCPass - 2012 January

A 63 year old woman has recently had lethargy and arthralgia. She was diagnosed as having influenza infection, as there was an outbreak in the area recently. She presents 1 week later with a cough and breathlessness. On examination, she had bilateral crackles audible on examination. CXR confirms bilateral consolidation and infiltrates.

*Which one of the following is most likely as a cause?*

- 1- Legionella
- 2- Mycoplasma
- 3- Streptococcus pneumoniae
- 4- Klebsiella
- 5- Staphylococcus aureus

#### Answer & Comments

Answer: 5- Staphylococcus aureus

Normal incidence of staph aureus pneumonia is 2%, However this is significantly increased in iv drug users and influenzae virus infections.

Post influenzae staph aureus pneumonia is characterised by rapid clinical deterioration with septicaemia.



[ Q: 2444 ] MRCPass - 2012 January

A 25 year old man was admitted to hospital with frequent bloody diarrhea (10-15 bow el motions/day), abdominal pain, and fever for a period of 3 months. There is no history of recent travel and the patient did not respond to courses of antibiotics given by the GP. On admission, physical examination showed a temperature of 37.5°C; the abdomen was soft, but there was moderate tenderness in the lower abdomen.

A colonoscopy was performed. This showed large areas of continuous severe inflammatory changes of congestion, oedema and irregular abscesses around the sigmoid colon with diverticulae seen.

*What is the diagnosis?*

- 1- Diverticulitis
- 2- Crohn's disease
- 3- Ulcerative colitis
- 4- Inflammatory colitis
- 5- Ischaemic colitis

#### Answer & Comments

Answer: 3- Ulcerative colitis

The history of bloody diarrhea is typical of ulcerative colitis.

The biopsy specimen showing severe areas of inflammation are typical of colitis. In this case, although there are diverticulae, diverticulitis should not cause such large areas of inflammatory changes.



[ Q: 2445 ] MRCPass - 2012 January

A 44-year-old South Asian man had a routine blood test with his GP. He has no symptoms. These results were found:

Hb 10.5 g/dl, MCV 75 fl, WCC  $7 \times 10^9/l$ , platelets  $220 \times 10^9/l$ , HbA2 5% (<3.5%)

A blood film showed hypochromia, slight microcytosis and anisocytosis, a few target cells, and basophilic stippling.

*What is the diagnosis?*

- 1- Sideroblastic anaemia
- 2- Alpha thalassemia trait
- 3- Beta thalassemia trait
- 4- Acute intermittent porphyria
- 5- Lead poisoning

#### Answer & Comments

Answer: 3- Beta thalassemia trait

The blood film shows an iron deficiency picture, target cells and basophilic stippling.

Additionally the patient is asymptomatic and there are elevated HbA2 levels, hence it fits a thalassemia trait. Below are descriptions of some of the options.

$\beta$  thalassemia trait (minor): This trait is characterized by mild anemia and low RBC indices. This condition is typically caused by the deletion of 2  $\beta$  genes on one chromosome 16 (aa/oo) or one from each chromosome (ao/ao).

This condition is encountered mainly in Southeast Asia, the Indian subcontinent.

$\alpha$  thalassemia trait (minor): Patients have mild anemia, abnormal RBC indices, and abnormal Hb electrophoresis results with elevated levels of Hb A2, Hb F, or both. Peripheral blood film examination usually reveals marked hypochromia and microcytosis (without the anisocytosis usually encountered in iron deficiency anemia), target cells, and faint basophilic stippling. The production of  $\alpha$  chains from the abnormal allele varies from complete absence to variable degrees of deficiency.



[ Q: 2446 ] MRCPass - 2012 January

A 21-year-old lady with polycystic

ovary syndrome was prescribed Metformin.

*How does Metformin acts in this situation?*

- 1- Increasing oestradiol levels
- 2- Increasing luteinising hormone levels
- 3- Increasing gluconeogenesis
- 4- Increasing insulin levels
- 5- Increasing peripheral glucose utilisation

#### Answer & Comments

Answer: 5- Increasing peripheral glucose utilisation

Metformin is being used increasingly in polycystic ovary syndrome (PCOS) and non-alcoholic steatohepatitis, two diseases that feature insulin resistance.

metformin improves insulin sensitivity by increasing peripheral glucose uptake and utilization



[ Q: 2447 ] MRCPass - 2012 January

A 25-year-old man presents with swelling and pain in his left arm after exercising in the gym. Symptoms started 75 minutes after the exercises. The arm turned reddish, and he described it as 'feeling different than it ever had before'. On examination there was no supraclavicular tenderness but when he lifted his arm up the brachial pulse on the left arm was absent.

*What is the likely diagnosis?*

- 1- Lower trunk brachial plexus lesion
- 2- Syringomyelia
- 3- Thoracic outlet syndrome
- 4- Neuralgic amyotrophy
- 5- Takayasu's arteritis

#### Answer & Comments

Answer: 3- Thoracic outlet syndrome

Thoracic outlet syndrome is a syndrome involving compression at the superior thoracic outlet involving compression of a neurovascular bundle. It can affect the brachial plexus and/or the subclavian artery.

The compression may be positional (caused by movement of the clavicle and shoulder girdle on arm movement), a first rib fixation and a cervical rib.



[ Q: 2448 ] MRCPass - 2012 January

A 32-year-old female presents complaining of a purpuric rash on the back of her legs and her buttocks. She has been complaining of a sore throat and a productive cough a week ago. She also has mild pains in her elbow and knee joints. She has no significant past medical history and has not been on any medications recently. A urine dipstick shows blood ++ proteins +. Her blood results are:

Hb 11.3 g/dl

Platelets  $155 \times 10^9/l$

WCC  $5.3 \times 10^9/l$

PT 13 secs

APTT 30 secs

sodium 135 mmol/l

potassium 4.5 mmol/l

urea 5 mmol/l

creatinine 100  $\mu\text{mol/l}$

*What is the most likely diagnosis?*

- 1- Drug-induced thrombocytopenia
- 2- Henoch-Schönlein purpura
- 3- Idiopathic thrombocytopenic purpura
- 4- Thrombotic thrombocytopenic purpura
- 5- Systemic lupus erythematosus

#### Answer & Comments

Answer: 2- Henoch-Schönlein purpura

This patient is likely to have Henoch-Schönlein purpura (HSP), which is a self-limited systemic vasculitis. It is suspected to be triggered by an IgA-mediated response to an antigen. It is characterized by 4 clinical syndromes:

1. Palpable purpura in the absence of thrombocytopenia or coagulopathy. Develops in 100% of patients.
2. Arthritis/arthralgia in 45-75% of patients. Second most common manifestation of HSP.
3. Abdominal pain in 50%, GI bleeding (often occult) in 20-30% of patients.
4. Renal disease in 20-50%.



[ Q: 2449 ] MRCPass - 2012 January

A 20 year old man drinks a litre of beer and has polyuria.

*Which one of these mechanisms leads to polyuria?*

- 1- Decreased glomerular filtration rate
- 2- Decreased Aquaporin action
- 3- Increased ADH secretion
- 4- Increased atrial natriuretic peptide
- 5- Increased sodium absorption

#### Answer & Comments

Answer: 2- Decreased Aquaporin action

Aquaporins selectively conduct water molecules in and out of the cell, while preventing the passage of ions and other solutes. There are several types of aquaporin receptors, and aquaporin 2 absorbs water in response to antidiuretic hormone and in this case, the effect of Aquaporin 2 is decreased leading to polyuria.



[ Q: 2450 ] MRCPass - 2012 January

A statistician is advising a research about a study of blood pressures in a specific

ethnic population. The researcher is concerned about the spread of blood pressures being larger than in the general population, hence affecting the sample mean.

*Which of these measures provides an estimate of this concept of uncertainty?*

- 1- Sensitivity
- 2- Specificity
- 3- Positive predictive value
- 4- Negative predictive value
- 5- Standard error of mean

#### Answer & Comments

Answer: 5- Standard error of mean

Standard deviation provides a measure of spread of observations about mean. It based on deviation of each observation from the mean value. Standard error of the mean is the standard deviation of the sampling distribution of the mean - which gives an estimate of how close the sample mean is to the true population mean. It increases with sample size and increases with standard deviation.

The S.E.M. is the standard deviation divided by the square root of the sample size  $SEM = \frac{s}{\sqrt{N}}$  where  $s$  is the standard deviation of the original distribution and  $N$  is the sample size.



[ Q: 2451 ] MRCPass - 2012 January

A 36-year-old woman was commenced on nasogastric feeding following significant weight loss. She has a history of severe alcohol abuse. Three days later she becomes very confused. On examination she was apyrexial, appeared appropriately hydrated, a pulse of 98 bpm pressure 96/60 mmHg.

*Which one of the following investigations should be done?*

- 1- Bicarbonate

- 2- Phosphate
- 3- Calcium
- 4- Magnesium
- 5- Potassium

#### Answer & Comments

Answer: 2- Phosphate

The patient has refeeding syndrome. Refeeding malnourished patients increases basal metabolic rate. This anabolic response causes intracellular movement of minerals, serum phosphate levels may fall significantly, leading to cardiorespiratory compromise, confusion and lethargy.



[ Q: 2452 ] MRCPass - 2012 January

A 50 year old man presents with hearing loss and difficulty with balance and gait. He is examined carefully by the neurologist.

*Which one of the following signs is consistent with early presentation of acoustic neuroma?*

- 1- Bitemporal hemianopia
- 2- Decrease in visual acuity
- 3- Loss of corneal reflex
- 4- Tongue deviation
- 5- Loss of gag reflex

#### Answer & Comments

Answer: 3- Loss of corneal reflex

Acoustic neuroma is a benign primary intracranial tumor of the myelin-forming cells of the vestibulocochlear nerve (CN VIII). The earliest symptoms of acoustic neuromas include ipsilateral sensorineural hearing loss/deafness, disturbed sense of balance and altered gait, vertigo with associated nausea and vomiting, and pressure in the ear, all of which can be attributed to the disruption of normal vestibulocochlear nerve function. Additionally more than 80% of patients have

reported tinnitus (most often a unilateral high-pitched ringing, sometimes a machinery-like roaring or hissing sound, like a steam kettle). Additionally, the classic description of early trigeminal involvement with an acoustic neuroma is loss of the corneal reflex.



[ Q: 2453 ] MRCPass - 2012 January

A 60 year old lady presents with lethargy. On investigation the following results were obtained:

Hb 7.8g/dl  
WBC  $3 \times 10^9/l$   
Platelet  $90 \times 10^9/l$   
MCV 109 fl

Anti parietal antibody positive.

An endoscopy was performed.

*Which area is most likely to sure abnormal biopsy to confirm the diagnosis?*

- 1- Proximal stomach
- 2- Distal stomach
- 3- Oesophagus
- 4- Duodenum
- 5- Terminal ileum

#### Answer & Comments

Answer: 1- Proximal stomach

The diagnosis is likely to be pernicious anaemia because of the macrocytic anaemia and positive anti parietal antibody. The question refers to where atrophic gastritis occurs. There are two types of atrophic gastritis.

Type A gastritis primarily affects the body/fundus (proximal) of the stomach, and is more common with pernicious anemia.

Type B gastritis (most common overall) primarily affects the antrum (distal), and is more common with H. pylori infection.





[ Q: 2454 ] MRCPass - 2012 January

A 36 year old man has presented with back pains and joint pains over several months. He has no other past medical history to date. He mentioned that his father had a history of joint problems. On examination, there is no evidence of skin involvement. Joint examination revealed evidence of synovitis in the metacarpophalangeal, metatarsal and wrist joints bilaterally limiting his range of joint movements.

Laboratory testing revealed a C-reactive protein of 0.33 mg/dl (<0.80 mg/dl), strongly positive CCP antibody, IgG of 148 Units (<20 Units), and angiotensin-converting-enzyme (ACE) of 73 U/liter (<67 U/liter). Anti nuclear antibody (ANA), anti neutrophil cytoplasmic antibody (ANCA) and rheumatoid factor (Rh F) were negative.

*What is the diagnosis?*

- 1- Dermatomyositis
- 2- Psoriatic arthropathy
- 3- Rheumatoid arthritis
- 4- Osteoarthritis
- 5- Systemic lupus erythematosus

#### Answer & Comments

Answer: 3- Rheumatoid arthritis

Anti-citrullinated protein/peptide antibodies (Anti-CCP) are autoantibodies frequently detected in rheumatoid arthritis patients. It has a sensitivity of 70% as a diagnostic test. The positive anti-CCP antibodies and symmetrical polyarthropathy without skin involvement suggests rheumatoid arthritis.

Rheumatoid factor is an IgM antibody against IgG. Some patients with rheumatoid arthritis will have a negative rheumatoid factor, as in this case.



[ Q: 2455 ] MRCPass - 2012 January

A 55 year old man presents with

palpitations which have been going on for 2 days. He has a past medical history of hypertension and currently takes aspirin and amlodipine. On examination he has a regular pulse rate of 150.

The ECG shows a narrow complex tachycardia.

*What is the likely arrhythmia?*

- 1- Atrial fibrillation
- 2- Atrial flutter
- 3- Atrioventricular re-entry tachycardia
- 4- Atrioventricular nodal re-entry tachycardia
- 5- Idioventricular rhythm

#### Answer & Comments

Answer: 2- Atrial flutter

The heart rate of 150 which is regular, narrow QRS complex tachycardia is suggestive of atrial flutter with 2:1 conduction. The atrial flutter circuit usually runs at a rate of 300 per minute and can present with 2:1, 3:1 or 4:1 conduction.



[ Q: 2456 ] MRCPass - 2012 January

A 28 year old patient presents to the clinic for advice. His brother has recently been diagnosed with haemochromatosis.

*Which one of the following is the most useful screening test?*

- 1- Ferritin
- 2- HFE gene analysis
- 3- Ultrasound of the liver
- 4- Liver iron levels
- 5- Transferrin saturation

#### Answer & Comments

Answer: 5- Transferrin saturation

Transferrin saturation (TS) is the most effective and inexpensive screening test for

Fe overload. If the TS is > 45%, the test should be repeated, together with serum ferritin. If TS (with or without high ferritin) is raised, HFE genes should be determined.



[ Q: 2457 ] MRCPass - 2012 January

A 46 year old lady has had moderate redness in her right eye which is painless. She has a long standing history of changes in her hands and elbows consistent with rheumatoid arthritis. Her ocular condition had improved within a few days without treatment.

*What is the likely diagnosis?*

- 1- Glaucoma
- 2- Scleritis
- 3- Episcleritis
- 4- Keratoconjunctivitis sicca
- 5- Optic neuritis

#### Answer & Comments

Answer: 3- Episcleritis

Episcleritis is a relatively common benign inflammatory condition of the eye. The symptoms of the disease are usually self-limiting, presenting in part with acute onset of red eye. Episcleritis is often acute and painless, whilst scleritis has more gradual onset and very painful. Although most of the cases are idiopathic, there is often an underlying disease including rheumatoid arthritis, polyarteritis nodosa, systemic lupus erythematosus, sarcoidosis and Wegener's granulomatosis.



[ Q: 2458 ] MRCPass - 2012 January

A 55 year old gentleman presents with dizziness. He was on various medications. On examination his Blood pressure was 110/68mm of Hg. The ECG

showed Polymorphic VT with constant varying axis (Torsade de pointes).

*What should be administered?*

- 1- Flecainide
- 2- Magnesium sulphate
- 3- Amiodarone
- 4- DC cardioversion
- 5- Na bicarbonate

#### Answer & Comments

Answer: 2- Magnesium sulphate

Torsade is defined as a polymorphous VT in which the morphology of the QRS complexes varies from beat to beat.

This was symbolically termed torsade de pointes, or "twisting of the point" about the isoelectric axis.

The electrolyte disturbances that have been reported to precipitate torsade include hypokalemia and hypomagnesemia.

Torsade also is subject to degeneration into ventricular fibrillation so therapy should be started as soon as the rhythm clearly fulfills the criteria for torsade. Treat hypokalemia if it is the precipitating factor and administer magnesium sulfate in a dose of 2-4 g intravenously (IV) initially. Magnesium is usually very effective, even in the patient with a normal magnesium level.



[ Q: 2459 ] MRCPass - 2012 January

A 21-year-old man presented to A&E with fever for one day. On arrival, the patient's BP was 109/50 mmHg, pulse rate was 115 and temperature was 38.1°C. On examination, there were generalised maculopapular rash.

Investigations showed a raised white cell count of 18 with neutrophilia, raised CSF protein of 5.45 g/L and decreased CSF glucose of 0.1 mmol/L. CSF was turbid with

predominating polymorphs and CSF culture grew *Neisseria meningitidis*. The patient has close contact with 2 other housemates.

*What prophylaxis should be given?*

- 1- Penicillin
- 2- Flucloxacillin
- 3- Rifampicin
- 4- Isoniazid
- 5- Gentamicin

#### Answer & Comments

**Answer:** 3- Rifampicin

Those who have close contact with a patient with meningococcal infection should have prophylaxis. The current regime for chemoprophylaxis includes oral rifampicin 600 mg every 12 hours for 2 days, a single oral dose of ciprofloxacin 500 mg or ceftriaxone 250 mg intramuscularly.



[ Q: 2460 ] MRCPass - 2012 January

A 65 year old patient with colorectal cancer has been commenced on a chemotherapy regime with Capecitabine and oxaliplatin following surgery.

*What is the main difference between 5 FU and capecitabine?*

- 1- Capecitabine is used orally
- 2- Capecitabine has a broader indication
- 3- Capecitabine causes peripheral neuropathy
- 4- 5 FU has less side effects
- 5- 5 FU interacts with warfarin

#### Answer & Comments

**Answer:** 1- Capecitabine is used orally

Capecitabine is the oral equivalent of intravenous 5 -FU. Capecitabine (Xeloda, Roche) is an orally-administered chemotherapeutic agent used in the treatment of metastatic breast and colorectal

cancers. It is a prodrug, that is enzymatically converted to 5-fluorouracil in the tumor, where it inhibits DNA synthesis and slows growth of tumor tissue. Pancytopenia, diarrhoea and hand-foot syndrome are main side effects.



[ Q: 2461 ] MRCPass - 2012 January

A 61 year old lady presents with a flu like illness and cough. She had not improved despite amoxicillin prescribed by the GP over the last week. On examination, she had a temperature of 38 C and was tachycardic. Respiratory examination and chest X ray confirmed right middle lobe consolidation. Antibodies to mycoplasma pneumonia was sent and repeated a week later, demonstrating increasing titres.

She is allergic to macrolides so she could not be given erythromycin.

*Which one of the following antibiotics is a good alternative?*

- 1- Ceftriaxone
- 2- Tazocin
- 3- Gentamicin
- 4- Linezolid
- 5- Doxycycline

#### Answer & Comments

**Answer:** 5- Doxycycline

The patient may have developed antibiotic related diarrhoea. Mycoplasma infection can be treated with macrolides (erythromycin), ciprofloxacin and doxycycline. An antibiotic with narrower spectrum of action here is doxycycline.



[ Q: 2462 ] MRCPass - 2012 January

A 22 year old woman presents bilateral leg weakness and numbness following an episode of diarrhoea 2 weeks ago. On examination, she has distal weakness

in the hands and legs. Supinator and ankle reflexes were difficult to elicit.

*Which of the following should be used to monitor her condition?*

- 1- Postural blood pressure
- 2- Chest x ray
- 3- Vital capacity
- 4- PEFr
- 5- FEV1/FVC ratio

#### Answer & Comments

Answer: 3- Vital capacity

The patient has distal motor and sensory nerve involvement following infection, hence the likely diagnosis is acute inflammatory demyelinating polyneuropathy (Guillain Barre Syndrome). Vital capacity is used to monitor for respiratory distress due to neuromuscular weakness in Guillain Barre syndrome. Normal values are usually 3-6 litres, varying with age, gender and height.



[ Q: 2463 ] MRCPass - 2012 January

A 45 year old right-handed woman presented with difficulty reading. She was investigated with a CT brain which showed right sided parietal lobe infarction.

*Which of the following is likely to be contributing to her reading difficulty?*

- 1- Agraphia
- 2- Amnesia
- 3- Left right disorientation
- 4- Visual inattention
- 5- Hemianopia

#### Answer & Comments

Answer: 4- Visual inattention

This patient is right handed, hence the left brain is dominant, and the right parietal lobe infarct is in the non dominant hemisphere.

Tests for dominant inferior parietal lobe function includes right-left orientation, naming fingers, and calculations and Gerstmann syndrome describes dominant lobe signs. A mnemonic for the signs is ALF (acalculia / agraphia, left right disorientation and finger agnosia).

The non-dominant parietal lobe is important for visual spatial sensory tasks such as attending to the contralateral side of the body and space as well as constructional tasks such as drawing a face, clock or geometric figures. A non dominant lesion leads to visual inattention and dyspraxia (unable to coordinate motor tasks).



[ Q: 2464 ] MRCPass - 2012 January

A 36 year old African man with known HIV infection presents with several episodes of seizures. His CD4 count was 130 cells/mm<sup>3</sup> when measured 1 month ago. On examination, he had a temperature of 38 °C and was confused with an MTS score of 5/10. There were no focal neurological signs. He had an MRI scan which shows multiple ring enhancing lesions. CSF examination showed an elevated protein count, lymphocytosis and normal glucose levels. The CSF cryptococcal antigen was negative. A chest X ray was normal.

*What is the likely diagnosis?*

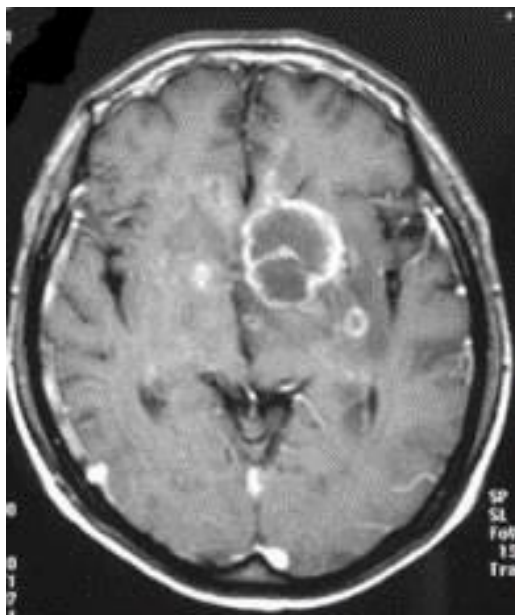
- 1- Progressive multifocal leukoencephalopathy
- 2- Cerebral toxoplasmosis
- 3- Cerebral lymphoma
- 4- Tuberculosis
- 5- Bacterial meningitis

#### Answer & Comments

Answer: 2- Cerebral toxoplasmosis

The likely diagnosis is cerebral toxoplasmosis as there are multiple ring enhancing lesions. Lymphoma usually causes single enhancing

lesions and PML is less frequently ring enhancing. Tuberculosis frequently causes significantly low glucose levels.



Cerebral Toxoplasmosis



[ Q: 2465 ] MRCPass - 2012 January

A 36 year old woman lives alone. She has been unable to work because she begins to fear that the other co-workers are plotting against her. She also fears leaving the home, due to embarrassment. She has become increasingly anxious and withdrawn, and refused to eat with anyone else. Then she began receiving mental messages when she watched television, so she withdrew from the living area as well. She was finally hospitalized after she barricaded herself in her bedroom.

*What is the diagnosis?*

- 1- Obsessive compulsive disorder
- 2- Personality disorder
- 3- Paranoid schizophrenia
- 4- Bipolar disorder
- 5- Hypochondriasis

Answer & Comments

Answer: 3- Paranoid schizophrenia



[ Q: 2466 ] MRCPass - 2012 January

A 60-year-old man has a history of aortic stenosis. He developed symptoms of shortness of breath and was referred into hospital. On examination, he had a raised JVP, bilateral basal crepitations in the lung and moderate ankle oedema. He had a harsh systolic murmur in the aortic area and a soft second heart sound. The ECG showed sinus rhythm with left ventricular hypertrophy. An echocardiogram showed severe aortic stenosis and heavy valvular calcification. There was mild aortic regurgitation. Left ventricular ejection fraction was 45%.

*Which one of the following is the most significant indicator of poor prognosis?*

- 1- Aortic valve calcification
- 2- LVH on the ECG
- 3- Aortic regurgitation
- 4- Left ventricular failure
- 5- Atrial fibrillation

Answer & Comments

Answer: 4- Left ventricular failure

There are many factors to consider in the assessment of aortic stenosis, the valve gradient on echocardiogram, left ventricular function, pulse character, and symptoms of the patient. In the list of features above, the most significant is the development of left ventricular failure which suggests that the patient is no longer able to compensate for the severe aortic stenosis.



[ Q: 2467 ] MRCPass - 2012 January

A 40 year old man is reviewed 4



weeks post renal transplantation. He has been on ciclosporin and prednisolone.

*What is the mechanism of action of ciclosporin?*

- 1- Inhibits prostaglandins
- 2- Inhibits action of IL-2
- 3- Antagonises tetrahydrofolate reductase
- 4- Phosphodiesterase 5 inhibition
- 5- Podophyllin inhibitor

#### Answer & Comments

**Answer:** 2- Inhibits action of IL-2

Ciclosporin is a calcineurin inhibitor. It binds to the cytosolic protein cyclophilin (immunophilin) of T-lymphocytes. This complex of ciclosporin and cyclophilin inhibits calcineurin, which is responsible for activating the transcription of IL-2.



[ Q: 2468 ] MRCPass - 2012 January

A 26 year old man has recently been to India for a holiday, returning a week ago. He presents with fatigue and abdominal pains. He gives a history of diarrhoea for 5 days. On examination, he was jaundiced and had tender hepatomegaly.

His investigations show:

sodium 135 mmol/l, potassium 4.2 mmol/l, urea 5 mmol/l, creatinine 100 µmol/l, ALT 1380 (5-35) U/l, AST 1430 (1-31) U/l, ALP 360 (20-120) U/l, GGT 320 (4-35) U/l, Bilirubin 35 (1-22) µmol/l, Albumin 35 (37-49) g/l

*What is the likely diagnosis?*

- 1- HIV infection
- 2- Leptospirosis infection
- 3- Acute hepatitis A infection
- 4- Acute hepatitis B infection
- 5- Infectious mononucleosis

#### Answer & Comments

**Answer:** 3- Acute hepatitis A infection

The abrupt onset of fever, fatigue, malaise, anorexia, nausea, diarrhea, jaundice and abdominal discomfort are consistent with acute hepatitis A infection (especially history of diarrhoea). Leptospirosis is less likely as there is no renal involvement and infectious mononucleosis does not usually cause diarrhoea.



[ Q: 2469 ] MRCPass - 2012 January

A 16 year old lady presented to the cardiology clinic for assessment. She had been diagnosed with Turner syndrome. She had normal early developmental milestones but had multiple ear infections in childhood and presented with primary amenorrhea later. On examination, she had short stature, cubitus valgus and a webbed neck. Cardiac examination revealed a soft ejection systolic murmur in the aortic area.

*What is the most likely cause of the murmur?*

- 1- Ventricular septal defect
- 2- Bicuspid aortic valve
- 3- Aortic stenosis
- 4- Pulmonary stenosis
- 5- Partial anomalous venous drainage

#### Answer & Comments

**Answer:** 2- Bicuspid aortic valve

Normal females have two X chromosomes, but in Turner syndrome, one of those sex chromosomes is missing or has other abnormalities (XO). The most commonly observed are congenital obstructive lesions of the left side of the heart, leading to reduced flow on this side of the heart. This includes bicuspid aortic valve and coarctation (narrowing) of the aorta. 15% of adults with Turner's syndrome have bicuspid aortic



valves. 10% of patients with Turner's syndrome have coarctation of aorta.



[ Q: 2470 ] MRCPass - 2012 January

A 60-year-old man has developed symptoms of shortness of breath and was referred into hospital. On examination, he had a hyperdynamic pulse, prominent carotid pulsations and a displaced apex beat. He had a grade 3 early diastolic murmur in the lower left sternal edge.

*What is the likely diagnosis?*

- 1- Mitral stenosis
- 2- Mitral regurgitation
- 3- Atrial septal defect
- 4- Aortic stenosis
- 5- Aortic regurgitation

#### Answer & Comments

Answer: 5- Aortic regurgitation

A displaced apex beat, hyperdynamic and collapsing pulse, prominent carotid pulsations (Corrigan's sign) and early diastolic murmur heard best in the lower left sternal edge are signs of aortic regurgitation.



[ Q: 2471 ] MRCPass - 2012 January

A 36-year-old man who is known to have bronchiectasis has a chronic cough. A sputum sample is sent from the clinic.

*What organism is most likely to be isolated?*

- 1- Streptococcus pneumoniae
- 2- Klebsiella spp.
- 3- Haemophilus influenzae
- 4- Moraxella
- 5- Pseudomonas aeruginosa

#### Answer & Comments

Answer: 3- Haemophilus influenzae

The organisms found most typically causing ongoing infection in bronchiectasis include Haemophilus species (47-55% of patients) and Pseudomonas species (18-26% of patients)



[ Q: 2472 ] MRCPass - 2012 January

*Which one of these methods allows the study of the 3D structure of protein?*

- 1- Northern blotting
- 2- Southern blotting
- 3- Western blotting
- 4- X ray crystallography
- 5- Gel electrophoresis

#### Answer & Comments

Answer: 4- X ray crystallography

X-ray crystallography is a method of determining the arrangement of atoms within a crystal, in which a beam of X-rays strikes a crystal and diffracts into many specific directions. The method can reveal the 3D structure of many biological molecules, including vitamins, drugs, proteins and nucleic acids such as DNA.

The northern blot is a technique used in molecular biology research to study gene expression by detection of RNA in a sample. Northern blotting involves the use of electrophoresis to separate RNA samples by size, and detection with a hybridization probe (either DNA or RNA) complementary to part gene sequence. The Western blot is a technique involving electrophoresis to detect specific proteins in the given sample of tissue homogenate or extract (e.g. in HIV testing, or to detect prions in Bovine Spongiform Encephalopathy).

Northern blotting detects RNA and Southern blotting detects DNA.



[ Q: 2473 ] MRCPass - 2012 January

A 41-year-old lady was referred to an endocrinologist for evaluation of a lump in the neck. The patient reported a recent 5-kg weight gain and difficulty sleeping and lethargy. She mentioned that her mother has a problem with hypothyroidism and her son who is aged 10 has type I diabetes and is on insulin.

On examination, blood pressure was 110/78 mm Hg, and resting pulse was 76 beats per minute. Upon neck examination, a firm, tender thyroid gland was felt, approximately twice normal size, with the right lobe slightly larger than the left. A thyroid uptake scan showed a 24-h thyroid uptake of 32% and a homogenous (but asymmetric) distribution of isotope on thyroid scan, the right lobe containing more isotope than the left.

Blood results: Free T3 was 4.5 (4.0-8.0) pmol/L, Serum T4 was 5.4 ?g/dL (normal, 5-12), serum TSH was 9.5 mU/L (normal, 0.4-4.6). High titres of antithyroid peroxidase antibodies were found. A fine needle aspiration of the nodule was performed, and it revealed a mixed population of lymphoid cells, mainly small round and small cleaved lymphocytes, with numerous plasma cells:

*What is the diagnosis?*

- 1- Papillary thyroid carcinoma
- 2- Post partum thyroiditis
- 3- Multinodular goiter
- 4- Grave's disease
- 5- Hashimoto's thyroiditis

#### Answer & Comments

Answer: 5- Hashimoto's thyroiditis

In view of the family history of autoimmune disease, the diagnosis here is likely to be either Grave's disease or autoimmune thyroiditis (Hashimoto's thyroiditis). The associated hypothyroid picture makes this

patient more likely to have Hashimoto's thyroiditis.

A diagnosis of Hashimoto's thyroiditis is usually made when positive antithyroid peroxidase antibodies are present or spontaneous hypothyroidism develops and also low thyroglobulin antibody levels. Hashimoto's thyroiditis is an autoimmune disorder characterised by extensive infiltration of the thyroid parenchyma by lymphocytes and plasma cells, with the formation of germinal centres. Classically, presentation is with a goitre or hypothyroidism or both. It is the most common cause of sporadic goitrous hypothyroidism in non-iodine deficient areas. The thyroid may be barely palpable or greatly enlarged. Characteristically, it is firm, and well defined with an enlarged pyramidal lobe and palpable neighbouring lymph nodes.



[ Q: 2474 ] MRCPass - 2012 January

A 36-year-old woman was admitted to hospital with complaints of weakness, back pain and difficulty walking.

She had been treated for epilepsy for 20 years, and was being on a combination therapy of carbamazepine and valproic acid, which she had been taking for approximately 10 years. The seizures were well controlled with these drugs. She had a normal diet, was independent and worked in a restaurant. She had a normal social life.

Physical examination indicated that the patient was well-built and had no skeletal deformity. Neck and lumbosacral movements were slightly limited. In laboratory examinations, full blood cell count and renal function were normal.

Biochemical analyses showed: serum alkaline phosphatase (AP) 2670 U/L (normal 15-270), calcium 2.10 (2.25-2.7) mol/l, albumin 4.6 g/dL (3.5-5.0), and phosphate 0.75 (0.8-8) pmol/l. Serum 25-hydroxy (OH)-vitamin D concentration was 7 ng/mL (10-40).

Parathormone (PTH) concentration was 1371 pg/mL (12-72). X rays revealed minimal narrowing and irregularity of the sacroiliac joint, with marked osteoporosis and biconcave vertebrae.

*What is the underlying cause?*

- 1- Dietary vitamin D deficiency
- 2- Decreased sun exposure
- 3- Chronic inactivity
- 4- Chronic renal failure
- 5- Drug induced osteomalacia

#### Answer & Comments

Answer: 5- Drug induced osteomalacia

Based on the history of prolonged anticonvulsant use, low serum calcium, and 25-OH-vitamin D concentrations with high PTH, the most likely diagnosis is anticonvulsant-induced osteomalacia.

A normal social life and employment suggests normal amounts of sun exposure. Hypocalcemia, increased serum alkaline phosphatase, and decrease in the 25-OH-vitamin D concentrations are hallmarks. Phenobarbitone, phenytoin, carbamazepine and also sodium valproate can cause osteomalacia.

25-OH-vitamin D (alphacalcidol 1.5 µg/d) and calcium (elementary calcium 2 g/d) supplementations should be initiated. 1,25(OH)<sub>2</sub> vitamin D is more difficult and expensive to measure than 25(OH)D; moreover, it is not a good measure of vitamin D status.



[ Q: 2475 ] MRCPass - 2012 January

A 25 year old man has presented for evaluation for right sided gynaecomastia. He has had a mastectomy on the left side 2 years ago and is concerned that it is now recurring. Physical examination revealed a slim tall man with a height of 1.86 m. There was testicular

atrophy bilaterally and also gynaecomastia. There was also sparse facial and body hair. A series of blood tests were conducted revealing the following results;

prolactin concentration 320 µU/L (50-450)

testosterone 4 (11-36) nmol/L

LH 6 (0.5-9) IU/L

FSH 3 (1-8 ) IU/L

Early morning cortisol 500 (130-690) nmol/L

*What is the likely diagnosis?*

- 1- Klinefelter's syndrome
- 2- Hypopituitarism
- 3- Kallman's syndrome
- 4- Achondroplasia
- 5- Turner's syndrome

#### Answer & Comments

Answer: 1- Klinefelter's syndrome

Klinefelter's syndrome (XXY) causes testicular atrophy, which commonly leads to gynecomastia and infertility.

Androgen deficiency (in this case low testosterone) causes eunuchoid body proportions; sparse or absent.

facial, axillary, pubic, or body hair; decreased muscle mass and strength; feminine distribution of adipose tissue; gynecomastia; small testes and penis. Most 47,XXY males have normal intelligence.

The blood tests show normal levels of LH and FSH hence making this unlikely to be Kallman's syndrome (hypothalamic gonadotrophin releasing hormone deficiency)